

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

SEOUL SEMICONDUCTOR CO., LTD., a)	
Korean corporation, and SEOUL VIOSYS CO.,)	
LTD., a Korean corporation,)	
)	
Plaintiffs,)	
)	
v.)	C.A. No. 24-579 (JNR)
)	
TECHNICAL CONSUMER PRODUCTS,)	
INC. dba TCP LIGHTING,)	
)	
Defendant.)	

JOINT CLAIM CONSTRUCTION BRIEF

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J. Ex. 4	U.S. Patent No. 10,134,967
J. Ex. 5	U.S. Patent No. 9,147,821
J. Ex. 6	U.S. Patent No. 7,982,207
J. Ex. 7	U.S. Patent No. 9,929,314
J. Ex. 8	U.S. Patent No. 8,604,496
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I. REPRESENTATIVE CLAIMS

U.S. Patent No. 7,982,207

7. *The light emitting diode of claim 6, wherein the electrode pad is arranged directly on an upper surface of the transparent electrode layer outside of the opening.*

U.S. Patent No. 9,799,800

1. A light emitting device, comprising:
 - an n-type semiconductor layer;
 - a p-type semiconductor layer;
 - an active layer disposed between the n-type semiconductor layer and the p-type semiconductor layer; and
 - an electron blocking layer disposed between the p-type semiconductor layer and the active layer, wherein:
 - the p-type semiconductor layer includes a hole injection layer, a p-type contact layer, and a hole transport layer disposed between the hole injection layer and the p-type contact layer, and
 - the hole transport layer includes first and second *low-doped layers* and at least one *intermediate doped layer* disposed between the first and second *low-doped layers*, wherein the first *low-doped layer* adjoins the p-type contact layer and wherein dopant concentrations of the first and second *low-doped layers* are less than a dopant concentration of the at least one *intermediate doped layer*, wherein the dopant concentration of the first *low-doped layer* decreases with increasing distance from the *intermediate doped layer* and then increases with decreasing distance to the p-type contact layer.
14. A light emitting device, comprising:
 - a substrate;
 - an n-type semiconductor layer formed over the substrate;
 - an active layer formed over the n-type semiconductor layer;
 - a p-type semiconductor layer formed over the active layer, wherein the p-type semiconductor layer includes *first and second low-doped layers* and a *doped layer* disposed between the *low-doped layers* and the *second low-doped layers* include a hole concentration decreasing with increasing distance

from the active layer and then increasing with decreasing distance to the *doped layer*; and a p-type contact layer formed over the *doped layer*, and wherein the first low-doped layer adjoins the p-type contact layer and has a dopant concentration less than that of the *doped layer*.

U.S. Patent No. 8659,050

1. A light emitting diode (LED) package comprising:
a first lead frame and a second lead frame spaced apart from each other;
an LED chip disposed on a surface of the first lead frame and electrically connected with the second lead frame; and
a resin covering at least a part of the surface of the first and second lead frames,
wherein:
at least one of the first and second lead frames comprises a *groove* which is formed thereon, and the resin is formed in the *groove*; and
the *groove* comprises a plurality of *sub-grooves*, each *sub-groove* having a triangular cross-section.

U.S. Patent No. 9,147,821

1. A light-emitting device, comprising:
first and second lead frames spaced apart from each other, the first and second lead frames each comprising a first portion, and a second portion disposed on the first portion; and
a light-emitting diode chip disposed on the second portion of the first or second lead frame;
wherein each the first and second portions has an uniform thickness, the first and second portions have different planar shapes from each other,
wherein each the first and second portions comprises a sidewall, and at least one of the sidewalls is covered by a resin portion,
wherein the first and second lead frames each comprise a first surface, a second surface opposite to the first surface, and sidewalls disposed between the first and second surfaces, *at least one of the sidewalls comprising an inset sidewall partially defining an outer fixing space*, and

wherein a second planar area of the outer *fixing space* disposed between the second portions is smaller than a first planar area of the outer *fixing space* disposed between the first portions.

5. A light-emitting device, comprising:

first and second lead frames spaced apart from each other, the first and second lead frames each comprising a first portion, and a second portion disposed on the first portion; and

a light-emitting diode chip disposed on the second portion of the first or second lead frame;

wherein each the first and second portions has an uniform thickness, the first and second portions have different planar shapes from each other,

wherein each the first and second portions comprises a sidewall, and at least one of the sidewalls is covered by a resin portion,

wherein the first and second lead frames each comprise a first surface, a second surface opposite to the first surface, and sidewalls disposed between the first and second surfaces, *at least one of the sidewalls comprising an inset sidewall partially defining an outer fixing space*,

wherein at least one of the first and second lead frames comprises at least one inner *fixing space* filled by the resin, and,

wherein the inner *fixing space* comprises a *fixing hole*.

U.S. Patent No. 10,134,967

17. A light-emitting device, comprising:

a first lead frame and a second lead frame spaced apart from each other, the first and second lead frames each comprising a top surface, an opposing bottom surface, a *fixing hole*, and sidewalls arranged between the top surface and the bottom surface; and

a light-emitting diode chip disposed on the top surface of the first or second lead frame, wherein:

each of the first lead frame and the second lead frame comprises *a first undercut sidewall, a second undercut sidewall, and a third undercut sidewall that at least partially define a fixing space and interior portions of the first and*

second lead frames, the fixing space being formed by the undercut sidewalls of the first lead frame and the second lead frame,
each *fixing hole* is located in the interior portions of each of the first and second lead frames and *includes an undercut sidewall that envelopes inner bounds of the fixing hole,*
the top surfaces of the first and second lead frames are substantially flat, and the first lead frame and the second lead frame face each other in a horizontal direction such that the first *undercut sidewall* of the first lead frame faces the first *undercut sidewall* of the second lead frame,
the second *undercut sidewall* and the third *undercut sidewall* of the first lead frame are parallel to each other and perpendicular to the first *undercut sidewall* of the first lead frame,
the second *undercut sidewall* and the third *undercut sidewall* of the second lead frame are parallel to each other and perpendicular to the first *undercut sidewall* of the second lead frame.

U.S. Patent No. 8,604,496

1. An optical semiconductor device, comprising:
an n-type semiconductor layer;
a p-type semiconductor layer; and
a functional part provided between the n-type semiconductor layer and the p-type semiconductor layer,
the functional part including a plurality of active layers stacked in a direction from the n-type semiconductor layer toward the p-type semiconductor layer, and
each of at least two of the active layers including:
a multilayer stacked body including *a plurality of thick film layers* and *a plurality of thin film layers* alternately stacked in the direction, a thickness of the thin film layers being not more than a thickness of the thick film layers,
an n-side barrier layer provided between the multilayer stacked body and the p-type semiconductor layer,
a well layer; and
a p-side barrier layer provided between the well layer and the p-type semiconductor

layer, wherein the well layer is provided between the n-side barrier layer and the p-side barrier layer.

U.S. Patent No. 10,510,933

15. A light-emitting diode package, comprising:
a housing including a top surface opposite a bottom surface;
a light-emitting diode chip disposed in the housing;
a first phosphor configured to emit green light; and
a second phosphor configured to emit red light,
wherein:
the top surface of the housing include a lower portion, an upper portion and an intermediate portion between the lower portion and the upper portion,
the light-emitting diode chip has a Full Width at Half Maximum (FWHM) *less than or equal to about 40 nm*,
the first *and* second phosphors are disposed in a molding part and *the molding part is made of materials including at least one of silicone, epoxy, polymethylmethacrylate (PMMA), polyethylene (PE) and polystyrene (PS)*,
a peak wavelength of the first phosphor *ranges from about 520 nm to 570 nm*,
a peak wavelength of the second phosphor *ranges from about 600 nm to 670 nm*,
the second phosphor is a nitride-based phosphor and has a Full Width at Half Maximum (FWHM) different from the first phosphor,
at least one of the first and seconds phosphors has a Full Width at Half Maximum (FWHM) wider than that of the light-emitting diode chip, and
a white light is configured to be formed by a synthesis of light emitted from the light-emitting diode chip, the first phosphor, and the second phosphor.

U.S. Patent No. 11,632,836

1. A lighting device comprising:
a first light emitter comprising a plurality of light sources each being configured to emit light with a different color temperature;
a second light emitter comprising at least one light emitting structure configured to emit light having a longer peak wavelength than that emitted from the first light emitter;

a controller configured to adjust characteristics of light emitted from the first and second light emitters; and
a user interface member configured to receive input of a user and connected to the controller,
wherein each of the light sources comprises a light-emitting diode chip and a wavelength conversion member configured to convert a wavelength range of light emitted from the light-emitting diode chip, and
wherein the controller is further configured to disable the second light emitter in response to receiving an input for prohibiting emission of the light emitting structure through the *user interface member*.

U.S. Patent No. 9,29,314

1. A light emitting diode (LED) device comprising:
a substrate;
a light emitting structure disposed over the substrate and including a first semiconductor layer, *a second semiconductor layer*, and an active layer disposed between the first semiconductor layer and the *second semiconductor layer*;
a first electrode pad disposed over the first semiconductor layer;
a transparent electrode layer disposed over the *second semiconductor layer*;
a second electrode pad disposed over the transparent electrode layer;
a first extension extending from the first electrode pad; and
a second extension extending from the second electrode pad,
wherein the first extension includes first portions in contact with the first semiconductor layer and second portions not in contact with the first semiconductor layer, wherein one of the first portions and one of the second portions are alternately disposed along the first extension, and wherein the second extension includes a plurality of portions extending from the second electrode pad.
3. The LED device of claim 2, *wherein one of the plurality of portions of the first extension is disposed between the plurality of portions of the second extension.*

II. AGREED-UPON CONSTRUCTIONS

Since filing the parties' joint claim construction chart, TCP has agreed to Seoul's constructions of the following additional terms as reflected in the table below: (1) "a first undercut sidewall, a second undercut sidewall, and a third undercut sidewall that at least partially define a fixing space and interior portions of the first and second lead frames, the fixing space being formed by the undercut sidewalls of the first lead frame and the second lead frame;" (2) "each fixing hole ... includes an undercut sidewall that envelopes inner bounds of the fixing hole;" and (3) "at least one of the sidewalls comprising an inset sidewall partially defining an outer fixing space."

Patent / Claim(s)	Term/Phrase	Agreed Construction
'800 1	wherein the dopant concentration of the first low-doped layer decreases with increasing distance from the intermediate doped layer and then increases with decreasing distance to the p-type contact layer	the dopant concentration within the first low-doped layer begins at a local high at the intermediate doped layer, falls to a low, and then increases to a local high at the p-type contact layer
'800 14	the second low-doped layers include a hole concentration decreasing with increasing distance from the active layer and then increasing with decreasing distance to the doped layer	the hole concentration within the second low-doped layer begins at a local high at the active layer, falls to a low, and then increases to a local high at the doped layer
'821 2,5	the resin	"the resin" in claim 2 refers back to the recitation "a resin portion" as recited in claim 1. "the resin" in claim 5 refers back to the recitation "a resin portion" as previously recited in claim 5.
'496 1	functional part	[a plurality of active layers stacked in a direction from the n-type semiconductor layer toward the p-type semiconductor layer]
'675 1,17,18	a thickness of the second converter is in a range of 0.07 mm to 1.5 mm	the second converter is at least 0.07 millimeters thick and no more than 1.5 millimeters thick

Patent / Claim(s)	Term/Phrase	Agreed Construction
'675 6	wherein a thickness of the second converter is in a range of 100 um to 1000 um	the second converter is at least 100 microns thick and no more than 1000 microns thick
'675 8,16,20	wherein the light emission spectrum of the phosphors of the first converter includes at least one wavelength region where a portion of each light emission spectrum overlaps another light emission spectrum	the first plurality of phosphors each have an emission spectrum, and those emission spectra overlap
'675	half-value width	full width at half maximum
'314 5	wherein the second extension extend toward the first electrode pad and has a curved shape near the first electrode pad	the second extension extends [from the second electrode pad] in the direction of [the first electrode pad] and curves near the end
'314 1,5	in contact with	touching
'967 17,20	a first undercut sidewall, a second undercut sidewall, and a third undercut sidewall that at least partially define a fixing space and interior portions of the first and second lead frames, the fixing space being formed by the undercut sidewalls of the first lead frame and the second lead frame	the first and second lead frames each have at least three [undercut sidewalls] having overhangs, with the spaces under the overhangs being a [fixing space] and the region of the lead frames inward from fixing space being interior portions
'967 17,20	each fixing hole ... includes an undercut sidewall that envelopes inner bounds of the fixing hole	the shape of the interior volume within each fixing hole includes an undercut
'821 1,5	at least one of the sidewalls comprising an inset sidewall partially defining an outer fixing space	one or more of the sidewalls contain an overhang, with the space under the overhang being part of an [outer fixing space]

III. DISPUTED CONSTRUCTIONS

SEOUL'S INTRODUCTORY STATEMENT TO ITS OPENING BRIEF

Ordinary Meaning: As indicated in the tables at the beginning of each section, Seoul Semiconductor Co., Ltd. and Seoul Viosys Co., Ltd. (hereinafter “Seoul”) assert that most of the disputed terms should be afforded their ordinary meanings. Consistent with the Scheduling Order (D.I. 33 at 6 n.1), Seoul has provided ordinary-meaning constructions for those terms. However, Seoul maintains that these simple terms do not require construction. *See Voice Tech Corp. v. Unified Pats., LLC*, 110 F.4th 1331, 1341 (Fed. Cir. 2024) (“we need not construe claim limitations ‘where the construction is not ‘material to the [] dispute.’”) (citation omitted); *see also Promptu Sys. Corp. v. Comcast Corp.*, 92 F.4th 1372, 1380 (Fed. Cir. 2024) (“only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”) (citation omitted). As the Federal Circuit has repeatedly held, district courts are only required to address “fundamental dispute[s] regarding the scope of a claim term.” *See O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008). Here, many of the disputes should be resolved by rejecting TCP’s overly narrow proposals.

Explanation of Relevance: The Court ordered the parties to explain “why resolution of [each] dispute makes a difference.” (D.I. 33 at 6-7.) Because TCP selected all remaining terms, Seoul requested TCP to first address this requirement. TCP provided identical statements for every term. For many terms, therefore, it is unclear whether a “fundamental dispute” exists. Seoul will respond should TCP provide an explanation in its Answering Brief.

Indefiniteness: Courts have discretion to address indefiniteness disputes at the claim construction stage or later upon “a more robust evidentiary record.” *Datacore Software Corp. v. Scale Computing, Inc.*, No. CV 22-535-GBW, 2023 WL 5207928, at *5-6 (D. Del. Aug. 14, 2023)

(citing cases). Seoul requests that the Court choose the latter option given the multiplicity and undefined nature of TCP's challenges.

**TCP'S INTRODUCTORY STATEMENT
TO ITS ANSWERING BRIEF**

Technical Consumer Products, Inc. d/b/a TCP Lighting's ("TCP" or "Defendant") claim constructions remain true to the intrinsic and extrinsic evidence and should be adopted by this Court. On the other hand, Seoul Semiconductor Co., Ltd. and Seoul Viosys Co., Ltd. ("Seoul" or "Plaintiffs") ignore that evidence in their proposed constructions and propose only that each term in dispute be afforded its "plain and ordinary meaning." But Seoul goes even further when putting forth its claim constructions by ignoring the arguments and representations it itself made during prosecution of the asserted patents while seeking to overcome prior art to secure issuance of its patents—arguments Seoul now seeks to evade in order to impermissibly broaden the scope of the asserted claims. It is axiomatic, however, that claims are construed the same for purposes of both infringement and invalidity. As a result, Seoul's contradictory statements and arguments made in its claim construction submissions should be rejected. Because TCP's proposed constructions are consistent with the principles of claim construction law, the intrinsic record, and the extrinsic evidence, TCP respectfully submits that this Court should adopt TCP's proposed constructions for each term at issue.

**SEOUL'S INTRODUCTORY STATEMENT
TO ITS REPLY BRIEF**

TCP's arguments are largely directed to attacking constructions different from those Seoul proposes or stating unsupported and incorrect legal theories. Given the sheer number of issues TCP raised, Seoul has attempted to address as many of these arguments as practicable. Lack of an express disagreement with every such argument, however, should not be viewed as acquiescence in the reasoning applied or the conclusions reached.

- A. “The light emitting diode of claim 6, wherein the electrode pad is arranged directly on an upper surface of the transparent electrode layer outside of the opening.” (U.S. Patent No. 7,982,207, Claim 7)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>the electrode pad contacts the upper surface of the transparent electrode layer outside of the opening</i>	Indefinite	Construction of this term may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul’s Opening Position

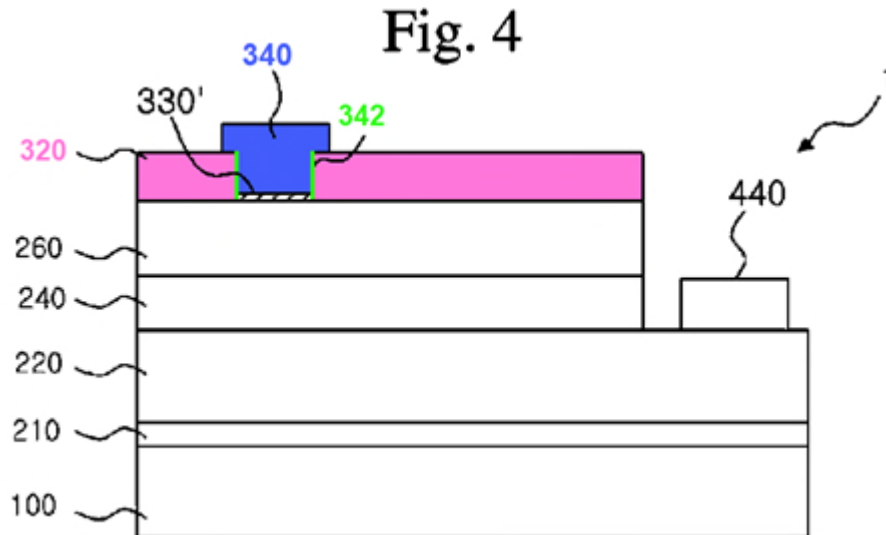
Apparent Agreements: None.

Disputes: Rather than a dispute regarding claim scope or meaning, TCP asserts an affirmative indefiniteness defense, which “must be proven by clear and convincing evidence.” *Maxell, Ltd. v. Amperex Tech. Ltd.*, 94 F.4th 1369, 1372 (Fed. Cir. 2024) (emphasis added, citation omitted). Controlling Supreme Court precedent limits indefiniteness to “claims [that], read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014) (emphasis added). This standard “mandates clarity, while recognizing that absolute precision is unattainable.” *Id.* at 910. The specification of the ’207 Patent handily exceeds that standard.

Although not limiting, figure 4 (colored and annotated below) provides clear guidance regarding the relationship between the recited structures. An electrode pad 340 (blue) is shown relative to a transparent electrode 320 (pink). (J. Ex. 6¹ (’207 Patent) at 4:66-5:8.) Rather than covering the entire underlying layer, the transparent electrode 320 has an opening 342 (green).

¹ References herein to “J. Ex.” are to Joint Exhibits cited in this filing as indicated in the above Table of Exhibits.

(*Id.*) Outside of the opening 342, the electrode pad 340 contacts the upper surface of the transparent electrode 320. (*Id.*) What Claim 7 requires, therefore, is that *the electrode pad contacts the upper surface of the transparent electrode layer outside of the opening*.



In addition, as to the term “opening”, Seoul notes that TCP has offered that term as part of its constructions for other disputed terms. (D.I. 105-1 at 3².) Thus, TCP has effectively conceded that the plain meaning of the claim term “opening” would be understood by a jury without construction. No additional construction for that term, therefore, should be necessary here and instead an instruction that the ordinary and customary meaning should apply will suffice.

2. TCP’s Answering Position

Claim 7 of the ’207 Patent is indefinite because it contradicts claims 1 and 6 from which it depends and thus, its scope is not reasonably certain. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, 910 (2014).

When read in combination with claim 6, from which claim 7 depends, the claimed “electrode pad” must both “*extend[] into the opening* of the transparent electrode layer” and be

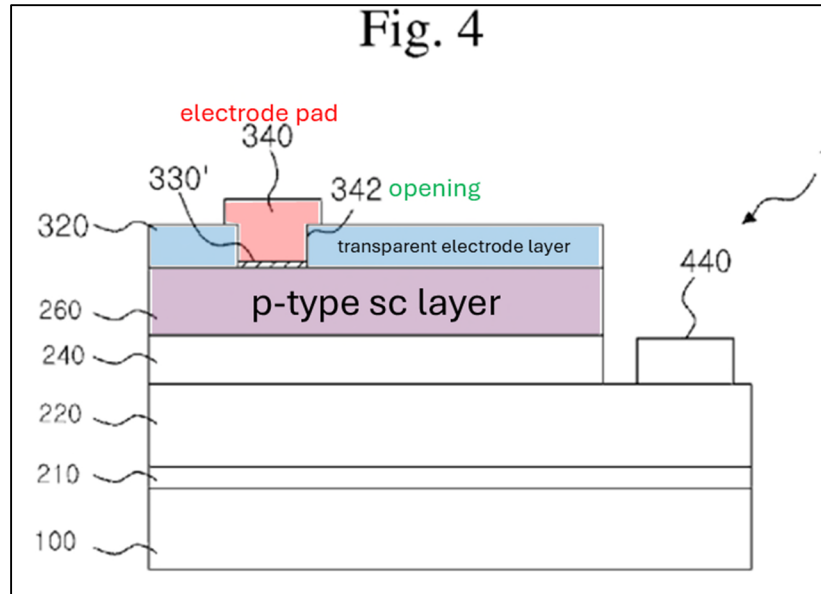
² Page references to previously submitted filings are to the number in the ECF header.

“*arranged* directly on an upper surface of the transparent electrode layer *outside of the opening*.”³

J. Ex. 6, claims 6–7. The ’207 Patent does not explain how the electrode pad can be at the same time both in “the opening” and arranged “outside of the opening.” While these arrangements could have been claimed in the alternative, they were not. Instead, these arrangements were claimed together, resulting in an inconsistent claim. *See, e.g., TVnGO Ltd. (BVI) v. LG Elecs. Inc.*, 861 F. App’x 453, 459–60 (Fed. Cir. 2021) (“The issue is not breadth of the dependent claims but their use of the disputed phrase in a way that contradicts the independent claims ... prevents reasonable certainty.”).

Seoul underscores this uncertainty when it alleges that FIG. 4 (shown below) discloses the elements of claim 7, and in that process explains how claim 1 is not satisfied. *See supra* §III.A.1, 11–12. Claims 6 and 7 depend from claim 1 that requires the light emitting diode comprise “a current blocking portion arranged in the opening [342, in the transparent electrode layer]; and an electrode pad [340] arranged on the current blocking portion.” J. Ex. 6, claim 1. FIG. 4, however, is described as having “a lower surface of the p-type electrode pad 340 [that] contacts a layer 330’, which is arranged on the p-type semiconductor layer 260 and is *in ohmic contact* with the electrode pad 340. ... Thus, *the DBR 330* positioned in the opening 342 as described in the previous embodiments *may be omitted*.” *Id.*, 5:3–10. By omitting the DBR 330, FIG. 4 excludes “a current blocking portion” as required by claim 1. *Id.*, 4:12–15 (“The DBR 330 blocks current from directly flowing from the p-type electrode pad 340 to the tunnel layer 310, so that the current can be more widely spread in the transparent electrode layer 320.”). And “layer 330” by establishing “ohmic contact” between p-type semiconductor layer 260 and electrode pad 340 is not current blocking but, if anything, a current conducting portion.

³ All emphasis in TCP sections added unless otherwise noted.



Id., FIG. 4 (annotated, with color corresponding to paragraph text for ease of identification).

Seoul also does not explain how FIG. 4 supports the specific language of either claim 6 or claim 7. Instead, Seoul explains how FIG. 4 illustrates its proposed construction, “the electrode pad **contacts** the upper surface of the transparent electrode layer outside of the opening.” But that is not what is claimed. There are any number of ways that claims 6 and 7 could be rewritten so as to be consistent with each other, *e.g.*, “a **portion** of the electrode pad extends into the opening” and “a **separate portion** is arranged outside of the opening.” But that is not what is claimed. Seoul cannot save claim 7 from this inconsistency simply by asking the Court to rewrite the claim. *See Nautilus*, 572 U.S. at 911 (“It cannot be sufficient that a court can ascribe *some* meaning to a patent’s claims; the definiteness inquiry trains on the understanding of a skilled artisan at the time of the patent application, not that of a court viewing matters *post hoc*.”) (emphasis in original). Rather, this Court should find that claim 7 is indefinite because it is inconsistent with claim 6.

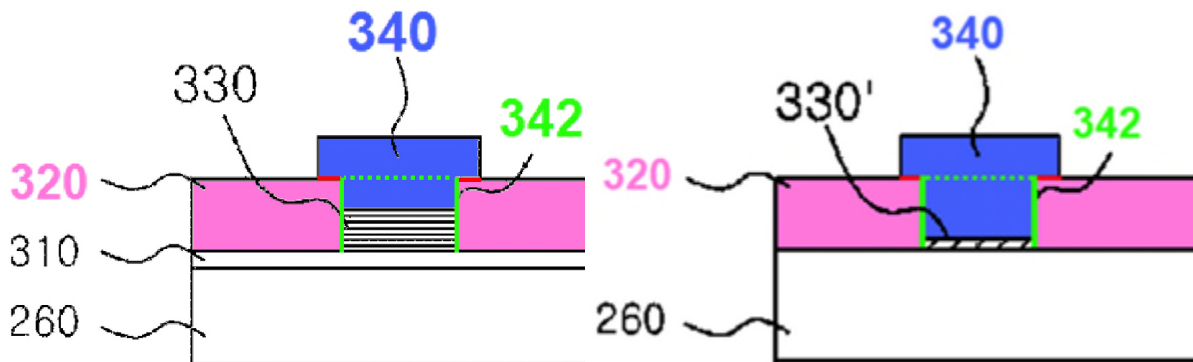
3. Seoul’s Reply Position

TCP asserts that there is an inconsistency between claims 6 and 7 of the ’207 Patent, which renders the latter claim indefinite. (§ III.A.2. *supra* at 12-13.) TCP’s argument is based on a

misdirected attempt to distinguish between the '207 Patent's disclosed embodiments.

At core, TCP's argument is that an "electrode pad [cannot] extend[] into the opening of the transparent electrode layer" (claim 6) and also "[be] arranged directly on an upper surface of the transparent electrode layer outside of the opening" (claim 7). (*Id.*) But that is precisely what is shown in the figures, described in the specification, and recited in the claims. TCP reaches its contrary conclusion by: (1) suggesting that the recited characteristics must apply to the entirety of the electrode pad (*id.* at 4); and (2) attempting to distinguish between embodiments (*id.* at 3).

The proper construction can be understood from the annotated versions of figure 1 (below left) and figure 4 (below right), which enlarge the area around the opening (342 (indicated by solid light green lines)) in the transparent electrode layer (320 (pink)). As the images show, a portion of the electrode pad (340 (blue)) extends into the opening (342) as indicated by the green dotted line. In contrast, outside of the opening (342) the electrode pad (340) is arranged directly on the upper surface of the transparent electrode layer (320) as indicated by the solid red lines.



This arrangement is also described in the specification. (J. Ex. 6 ('207 Patent) at 4:4-11.)

TCP's contorted view, which would exclude all disclosed embodiments (§ III.A.2. *supra* at 12-14), is legally defective. *CUPP Computing AS v. Trend Micro Inc.*, 53 F.4th 1376, 1380 (Fed. Cir. 2022) ("a claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct") (emphasis added, citation omitted). Indeed, TCP's argument

is that, as a matter of law, claimed characteristic must apply to the entirety of a recited structure absent the qualifier “portion.” (§ III.A.2., *supra* at 14.) TCP provides no basis for this strained position. (*Id.*) Instead, the law is clear that “[t]he only meaning that matters in claim construction is the meaning in the context of the patent.” *CUPP Computing*, 53 F.4th at 1380 (emphasis added) (citation omitted). Here, the ’207 Patent makes that meaning clear.

Although irrelevant to this claim-construction dispute, TCP’s misunderstanding of the ’207 Patent’s disclosed embodiments warrants a brief response. The confusion originates from TCP’s unfounded belief that the embodiment shown and described with respect to figure 4 lacks a current blocking layer.

The ’207 Patent discloses two embodiments, a first that incorporates a dielectric-based current blocking layer (330) in the form of a distributed Bragg reflector (DBR) and a second that incorporates a semiconductor-based current blocking layer (330'). (*Compare* J. Ex. 6 (’207 Patent) at 4:33-44 (describing a DBR) *with* 4:66-5:10 (describing a semiconductor layer usable with or in place of the DBR).) As explained by Dr. Freezel, whether constructed using “an n++ layer doped with a high concentrate[ion] n-type impurity or an undoped InGaN,” semiconductor layer (330') acts as a current blocking layer. (J. Ex. 22 (Declaration Daniel Feezell Ph.D. (hereinafter “Feezell Decl.”)) ¶¶26-34; *see also* J. Ex. 23 (Chris G. Van de Walle “Electrical Conductivity Control” in *Introduction to Nitride Semiconductor Blue Lasers and Light Emitting Diodes* (2000, Nakamura ed.)) at 75); J. Ex. 24 (E. Fred Schubert, *Light-Emitting Diodes* (2d ed. 2006)) at 142-43.) Employing, for example, the negatively doped n++ layer on a positively doped p-type layer results in a reverse-bias diode. (Feezell Decl. ¶¶32-34.) Indeed, Dr. Krames provided a similar description during his deposition. (J. Ex. 25 (Deposition of Dr. Krames (hereinafter “Krames Depo.”)) at 95:16-96:8 (“that would be a reverse-biased diode, which would basically be blocking positive

current flow”).) This characteristic is expressly described with respect to “the exemplary embodiments of the present invention” which “prevent current from directly flowing from the electrode pad to a p-type semiconductor layer or a tunnel layer arranged thereon.” (*Id.* at ¶¶31-32 (citing ’207 Patent at 5:15-21.)) TCP’s alternative view finds no support in the ’207 Patent.

4. TCP’s Sur-Reply Position

Seoul’s argument that TCP’s plain reading of claims 6 and 7 is incorrect because it “would exclude all disclosed embodiments” highlights the problem with the claims as written. *See supra* §III.A.3, 15. Because the claim language is internally inconsistent, it does **not** encompass the disclosed embodiments. None of the embodiments describe an electrode pad that both “extends into the opening” and is “arranged ... outside of the opening.” When asked about the linguistic inconsistency between an object that “extends into” and is “arranged ... outside of” something, Dr. Feezell either refused to answer hypotheticals or asserted that everyday items are not a “one-to-one analogy” with the “complex topography” of the surface of an LED device. J. Ex. 30, 55:10–57:9, 58:1–16, 65:6–67:6. But, in his declaration Dr. Feezell had no problem comparing such topography to everyday items. J. Ex. 22, ¶27. Accordingly, Dr. Feezell’s purported understanding of the claim language should not be credited because it is based on self-serving hypotheticals that do not withstand scrutiny.

To square the claims with the embodiments, Seoul submits that the claims recite an electrode pad in which a **portion** “extends into the opening” and a **portion** is “arranged ... outside of the opening.” *See supra* § III.A.3, 15; J. Ex. 6, FIGs. 1, 3–4. But, this is not how the claims are written. Even though a court viewing the matter *post-hoc* could rewrite claims in a definite manner, this does not save claims from indefiniteness. *See supra* §III.A.2, 14. Further, despite Seoul **initially relying on FIG. 4 to support its construction**, it now asserts FIG. 4 is not relevant

to the dispute and criticizes TCP’s specification citations describing FIG. 4, while ignoring that “tunnel layer 310”—undisputably **not a current blocking layer**—is described exactly the same as “layer 330” as an “n++” layer in “ohmic contact” with other layers. *Compare supra* § III.A.3 *with supra* § III.A.1; J. Ex. 6, 3:36–42, 4:66-5:10.

- B.** **(a) “low-doped layer”**
 (U.S. Patent No. 9,799,800, Claims 1, 6, 7, 14, 17, and 19)
 (b) “intermediate doped layer”
 (U.S. Patent No. 9,799,800, Claims 1, 7, and 8)
 (c) “doped layer”
 (U.S. Patent No. 9,799,800, Claims 14-17, 19, and 20)

Plaintiffs’ Proposals	Defendant’s Proposals	Defendant’s Explanations
<p>(a) <u>low-doped layer</u></p> <p>Plain and ordinary meaning, or alternatively: <i>a semiconductor layer containing a dopant wherein the dopant concentration is less than a dopant concentration of the at least one intermediate doped layer</i> (Claim 1)</p> <p><i>a semiconductor layer containing a dopant wherein the dopant concentration is less than that of the doped layer</i> (Claim 14)</p>	<p>Indefinite, or “a layer having a dopant concentration less than $1 \times 10^{18}/\text{cm}^3$”</p>	<p>Construction of [these] term[s] may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.</p>
<p>(b) <u>intermediate doped layer</u></p> <p>Plain and ordinary meaning, or alternatively: <i>semiconductor layer containing a dopant, which is located between the first and second low-doped layers</i></p>	<p>Indefinite, or “a layer located between the first and second low doped layers and having a dopant concentration from $1 \times 10^{18}/\text{cm}^3$ to $1 \times 10^{20}/\text{cm}^3$”</p>	
<p>(c) <u>doped layer</u></p> <p>Plain and ordinary meaning, or alternatively: <i>a semiconductor layer containing a dopant</i></p>	<p>Indefinite, or “a layer having a dopant concentration from $1 \times 10^{18}/\text{cm}^3$ to $1 \times 10^{20}/\text{cm}^3$”</p>	

1. Seoul’s Opening Position

Apparent Agreements: The parties appear to agree: (1) “doped” means containing a dopant; (2) the “intermediate doped layer” is located between the two low-doped layers; and (3) the

dopant concentration of the two “low-doped” layers must be lower than “intermediate doped layer” and “doped layer” of claims 1 and 14 respectively. In addition, by using the term “layer” in their proposed constructions, the parties agree that the ordinary meaning of that term would be understood by a jury without construction.

Disputes: The same dispute applies to all three terms – whether to impose strict numerical boundaries onto the claims. The Federal Circuit has long held that claims are afforded their ordinary and customary meaning except: “1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

Rather than proposing ordinary meanings for the disputed claim terms, TCP proposes importing “limitation[s] from the written description into the claims” which is “one of the cardinal sins of patent law.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1320 (Fed. Cir. 2005) (*en banc*) (emphasis added); *Thorner*, 669 F.3d at 1366-67 (“We do not read limitations from the specification into claims.”). Based on its disclosure (D.I. 105-1 at 2-3), it appears that TCP intends to rely on lexicography. The standard for lexicography, however, is “exacting”. *Thorner*, 669 F.3d at 1365. More specifically, TCP proposes the same numerical limits for the “intermediate” and “doped” layers of claims 1 and 14 respectively from the written description of the ’800 Patent. In addition, because the doping level of the “low-doped” layers is recited relative to the “intermediate” and “doped” layers, TCP imposes numerical bounds to those terms as well. Contrary to TCP’s reasoning, however, nothing in the ’800 Patent “clearly express[es] an intent to redefine the term[s].” *Id.* at 1365. Instead, the specification explains that the disclosed layer “can have an Mg [*i.e.*, p-type dopant] concentration of from about $1 \times 10^{18}/\text{cm}^3$ to $1 \times 10^{20}/\text{cm}^3$.” (J. Ex. 9

(‘800 Patent) at 8:58-64 (emphases added).) Thus, lexicography is not a proper basis to impose the strict numerical limits demanded by TCP. In addition, because TCP provides no prosecution-history citation that could act as an unambiguous disavowal (D.I. 105-1 at 2-3), its overly narrow construction should be rejected.

In view of its proposals (which include constructions and alternative indefiniteness defenses (D.I. 105-1 at 2-3)), it appears that TCP intends to argue that the claims must have precise dopant-concentration limits or suffer indefiniteness. This view conflicts with Federal Circuit law, which holds “that terms of degree render a claim indefinite [only] where the intrinsic evidence (or extrinsic evidence, where relevant and available) provides insufficient guidance as to any objective boundaries for the claims[.]” *Niazi Licensing Corp. v. St. Jude Med. S.C., Inc.*, 30 F.4th 1339, 1348 (Fed. Cir. 2022) (emphasis added); *see also Ironburg Inventions Ltd. v. Valve Corp.*, 64 F.4th 1274, 1285 (Fed. Cir. 2023) (“numerical precision is not always required, even when using a term of degree”) (citing cases); *Sonix Tech. Co., Ltd. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1377 (2017) (“[A] patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement.”) (internal citation omitted). Indeed, “patentees often use ‘[d]escriptive words ... to ‘avoid[] a strict numerical boundary to the specified parameter.’” *Niazi Licensing*, 30 F.4th at 1347 (citing cases); *see also id.* (“[D]escriptive words (or terms of degree) in a claim may inherently result in broader claim scope than a claim defined with mathematical precision. But a claim is not indefinite just because it is broad.”) (citing cases).

Here, the very example that TCP cites for its constructions provide sufficient objective boundaries to defeat indefinites. Indeed, this very argument was addressed and rejected by the court in *Seoul Semiconductor Co. v. Feit Elec. Co.*, No. 2:22-CV-5097-AB-SHK, 2024 WL 5469238, at *15-16 (C.D. Cal. Oct. 9, 2024). The Court, therefore, should reject TCP’s baseless

indefiniteness defense.

2. TCP's Answering Position

The terms “low-doped layer,” “intermediate doped layer,”⁴ and “doped layer” are indefinite because the ranges of dopant concentrations encompassed by “low-doped” and “doped,” respectively, are not reasonably clear to a POSITA such that the claims would inform a POSITA of the scope of the invention with reasonable certainty. *See Nautilus*, 572 U.S. at 910; J. Ex. 26, ¶43. Alternatively, these claim terms should be construed consistent with the *only* dopant concentration ranges disclosed in the '800 Patent's specification. *See e.g.*, J. Ex. 9, 1:62–67, 5:54–61. While the arguments below apply similarly to all three terms, TCP focuses on “low-doped layer” as its scope is the most difficult to understand in view of the specification and Seoul's infringement contentions.

The '800 Patent provides little to no guidance for a POSITA to determine the objective boundaries of “*low*-doped.” J. Ex. 26, ¶44. Starting with the claims, the '800 Patent describes “low-doped” relative to the “intermediate doped” layer (i.e., “dopant concentrations of the first and second low-doped layers are less than a dopant concentration of the at least one intermediate doped layer”). J. Ex. 9, claim 1. Because “doped” and “low-doped” are not terms in the art with known boundaries, this relative description is insufficient on its own to place objective boundaries on these claim terms. J. Ex. 26, ¶¶44–46. Indeed, Seoul's proposed constructions contemplate that the “doped layer” merely “contain[s] a dopant” in any concentration, while the low-doped layers' dopant concentrations are “less than” this unbounded range. *Id.*, ¶¶46–47. However, a

⁴ “Intermediate doped layer” and “doped layer” are alternative terms used to claim the same aspect of the '800 Patent. *Compare* J. Ex. 9, claim 1 *with id.*, claim 14. According to Seoul, the term “intermediate” is related to the location of the intermediate doped layer, rather than its dopant concentration. *See supra* §III.B.1, 18 (chart).

range defined only as “less than” an unbounded range is equally unbounded and would include high dopant concentrations that are far from what a POSITA would understand to be a “low” magnesium (Mg) dopant concentration based on the art. *Id.* Moreover, Seoul’s proposed construction of “doped layer” as “containing a dopant” means that Seoul’s construction would be satisfied by a layer with ***only one net donor or acceptor***, which a POSITA would not consider a “doped layer.” *Id.* In that case, and according to Seoul’s proposed construction, any “low doped” layer would necessarily have a non-positive net acceptor concentration (i.e., undoped) and thus not qualify as a doped layer at all. *Id.*

In the specification, the terms “low” or “low-doped” are never used. Nor, is there any specific disclosure clarifying the meaning of “low-doped.” Absent “objective boundaries” from the specification, of which there are none, the phrase “low-doped” is indefinite because it is the sort of term that, “on its face, provides little guidance to one of skill in the art.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).

If, despite the term’s absence from the specification and Seoul’s interpretation encompassing virtually any dopant concentration, including no dopant at all, the Court nonetheless determines that “low-doped” is definite, the Court should construe this term consistent with the description of “undoped layer” in the specification, which is the specification’s closest analogue to the claimed “low-doped layers.” *Compare* J. Ex. 9, claims 1 (“the hole transport layer includes first and second low-doped layers and at least one intermediate doped layer disposed between the first and second low-doped layers”), 14 *with id.*, 6:46–67, FIG. 2 (depicting “intermediate doped layer 35b” between “undoped layers 35a”); J. Ex. 26, ¶49. The specification explains that “undoped layers” (i.e., layers that are not intentionally doped) contain a “***minute*** amount of Mg” because it is “unintended Mg” that is either “due to the Mg source remaining in the growth

chamber,” or “diffused” from a nearby doped layer. J. Ex. 9, 6:56–67. As a result, the specification further describes “undoped layers” as having “a ***much lower*** Mg concentration” than the doped layers. See J. Ex. 9, 6:52–54; see also J. Ex. 26, ¶49. The specification only describes the layers between the hole injection layer, p-type contact layer, and intermediate doped layer as “undoped layers.” See e.g., J. Ex. 9, Abstract, 1:52–61, 2:5–6, 2:32–35, 2:38–41, 3:21–25, 3:44–46, 5:25–26, 6:52–67, 8:31–9:6, 9:30–33. As such, the only meaning a POSITA could ascribe to the claimed “low-doped layer” is what the specification describes as an “undoped layer” and the Court should construe the term accordingly. J. Ex. 26, ¶49.

What is not clear from the specification is what objective range of dopant concentration is equivalent to “a minute amount,” or an “unintended” amount of Mg. *Id.* A POSITA would reasonably understand such amounts to be lower (if not “much lower,” as the specification describes) than the range the ’800 Patent identifies for intentionally doped layers. *Id.* Otherwise, the concentration would be indicative of intentional doping. *Id.*; see J. Ex. 9, 1:62–67. The specification describes intentionally doped semiconductor layers containing Mg in concentrations from “ $1 \times 10^{18}/\text{cm}^3$ ” to “ $4 \times 10^{20}/\text{cm}^3$ ” or more. J. Ex. 9, 1:62–67, 5:54–61. A POSITA thus would understand the Mg concentration in the disclosed “undoped layers,” which provide the only possible objective boundaries for the claimed “low-doped layers,” to be lower than “ $1 \times 10^{18}/\text{cm}^3$,” the lowest intentional dopant concentration disclosed in the specification. J. Ex. 26, ¶49; see J. Ex. 9, 1:65–67.

Seoul contends “the very example that TCP cites for its constructions provide sufficient objective boundaries to defeat indefinites [sic],”⁵ but this is precisely the issue. See *supra* §III.B.1,

⁵ Seoul’s citation to *Feit Electric* is unavailing because TCP’s indefiniteness argument is materially different than those raised by Feit or addressed by that Court, which was based on a distinction between “low-doped” and “undoped” that TCP does not assert here. *Seoul*

20. The ranges discussed above *could* provide objective boundaries, but Seoul’s proposed constructions—which are unbounded—allow Seoul to assert, that a “low-doped layer”—can be a layer in an LED with dopant concentrations—for example, 100 times greater than the concentrations taught in the ’800 Patent. Thus, Seoul seeks to fend off indefiniteness by pointing to the dopant concentration bounds in the specification but then proposes completely disavowing those same bounds when it comes to applying the claims to accused products. Seoul cannot have it both ways. Either these claim terms are indefinitely broad so as to encompass virtually any dopant concentration, or they are reasonably limited to the dopant concentrations actually disclosed by Seoul in the specification, as clarified by TCP’s proposed constructions. *See Interval Licensing*, 766 F.3d at 1371 (“[t]he claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art.”).

3. Seoul’s Reply Position

TCP argues that “[b]ecause ‘doped’ and ‘low-doped’ are not terms of art with known boundaries, [a] relative description is insufficient on its own to place objective boundaries on these claim terms.” (§ III.B.2., *supra* at 21 (citing J. Ex. 26 (Krames Decl.) ¶¶44-46).) In effect, TCP urges that claim terms must have a known definition as a “term of art” or instead be constrained solely to the examples provided in the specification. TCP cites no precedent for this dubious standard. (*Id.*)

As explained in Seoul’s opening brief, the proper legal standard was provided by the Supreme Court in *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014), as interpreted and applied in subsequent Federal Circuit decisions. Under *Nautilus*, “in assessing definiteness,

Semiconductor Co. v. Feit Elec. Co., No. 2:22-CV-5097-AB-SHK, 2024 WL 5469238, at *15–18 (C.D. Cal. Oct. 9, 2024).

claims are to be read in light of the patent’s specification and prosecution history.” *Id.* at 908 (citing cases). Absolute certainty is not required because “[s]ome modicum of uncertainty . . . is the ‘price of ensuring the appropriate incentives for innovation.’” *Id.* TCP ignores this standard by asserting that terms of degree must be resolvable with mathematical certainty. (§ III.B.2, *supra* at 21-22.) The Federal Circuit, however, has repeatedly rejected this form of analysis.

The dispute here is similar to *Guangdong Alison Hi-Tech Co. v. International Trade Commission*, 936 F.3d 1353 (Fed. Cir. 2019), where the Court held the term “lofty . . . batting” sufficiently definite. *Id.* at 1360. In particular, the Court cited a disclosed 70% example as a basis to find the disputed term not indefinite. *Id.* at 1363. Like TCP, the challenger argued in the alternative that if not indefinite, the exemplary 70% limitation must be imported into the claims. *Id.* The Court rejected that argument, finding that it has “no support in our case law.” *Id.* Instead, under the proper standard “examples in the specification may be used to inform those skilled in the art of the scope of the invention with reasonable certainty—thus demonstrating that the term is not indefinite—without being directly construed into the claim.” *Id.* (emphasis added, citing cases).

TCP follows the same flawed analysis as the appellee in *Guangdong Alison*, asserting that the exemplary concentrations from the specification must be imported into the claims to avoid indefiniteness. (§ III.B.2., *supra* at 21.) Under the controlling law, however, those examples inform the analysis without imposing them as strict boundaries.

Similarly, in *Ironburg Inventions Ltd. v. Valve Corp.*, 64 F.4th 1274, 1284 (Fed. Cir. 2023), the Federal Circuit held the term “elongate member” not indefinite. *Id.* at 1284. The challenger there asserted that the clear-and-convincing-evidence standard was met “due to the patent’s lack of objective guidance as to how much longer than wider the member must be in order to be

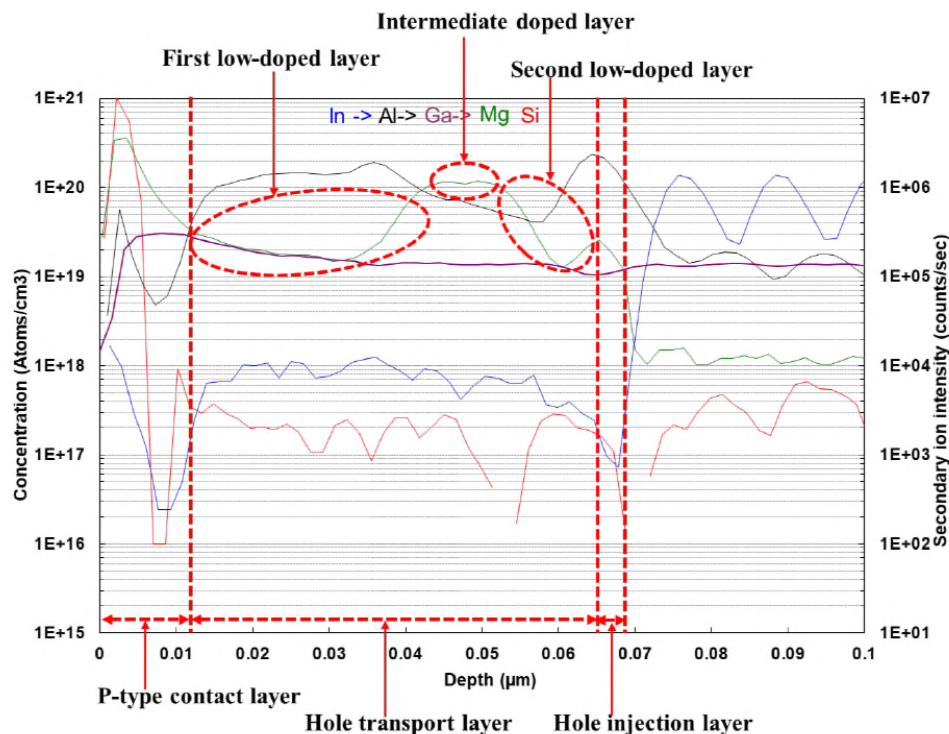
‘elongate.’” *Id.* at 1285. The Court disagreed, finding that the specification provides sufficient guidance. *Id.* Moreover, just as TCP does here, the challenger in *Ironburg* provided a construction as an alternative to its indefiniteness defense, which the Court rejected “because it ‘improperly import[ed] limitations . . . into the claims.’” *Id.* at 1286. The same result follows here, where the specification’s examples provide sufficient guidance to provide definiteness but cannot be imported into the claims. *See also Niazi Licensing Corp. v. St. Jude Med. S.C., Inc.*, 30 F.4th 1339 (Fed. Cir. 2022) (“[D]escriptive words (or terms of degree) in a claim may inherently result in broader claim scope than a claim defined with mathematical precision. But a claim is not indefinite just because it is broad.”) (citing cases); *Exmark Mfg. Co. Inc. v. Briggs & Stratton Power Prods. Grp., LLC*, 879 F.3d 1332, 1346 (Fed. Cir. 2018) (“Though Briggs seeks to impose a strict requirement of how straight the baffle portions must be, no such numerical precision is required when using such terms of degree.”).

Moreover, as explained in Seoul’s opening brief, another court addressed and rejected a substantially identical indefiniteness defense. (§ III.B.1., *supra* at 21-22.) (citing *Seoul Semiconductor Co. v. Feit Elec. Co.*, No. 2:22-CV-5097-AB-SHK, 2024 WL 5469238, at *15-16 (C.D. Cal. Oct. 9, 2024).) TCP did not distinguish or even acknowledge this contrary authority, leaving that court’s analysis unchallenged.

TCP’s contrary citation to *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364 (Fed. Cir. 2014), does not support a different conclusion. In that case, the Federal Circuit held that the recitation “unobtrusive manner” was “facially subjective claim language without an objective boundary.” *Id.* at 1373. This line of cases reaches back to *Datamize, LLC v. Plumtree Software, Inc.* 417 F.3d 1342 (Fed. Cir. 2005), where the claim term “aesthetically pleasing” (which the Court construed to mean “beautiful”) presented an eye-of-the-beholder problem – infringement

cannot “depend on the unpredictable vagaries of any one person’s opinion of the aesthetics of interface screens.” *Id.* at 1350 (emphasis added). In contrast, as to the claimed dopant ranges at issue here, there is no facially subjective aspect. (Feezell Decl. ¶¶35-37.) The *Datamize* line of cases, therefore, has no relevance.

TCP also raises the strawman argument that, as a matter of infringement, “Seoul’s proposed construction of ‘doped layer’ as ‘containing a dopant’ would be satisfied by a layer with only one net donor or acceptor.” (§ III.B.2., *supra* at 22 (emphasis omitted).) Seoul has never made such an assertion. Moreover, although the Court required TCP address how its proposed constructions would affect this case, its only response was to suggest that “[c]onstruction of this term may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.” As shown in the below example excerpted from Seoul’s infringement contentions, the accused layers have measured p-type dopant concentrations (here magnesium (Mg) colored green), which can’t be reconciled with TCP’s single-atom hypothetical.



By raising this inapt hypothetical directed to an unasserted infringement theory TCP creates misdirection. Under the proper analysis “[f]irst, the claims are construed to determine their scope.” *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1087 (Fed. Cir. 2003) (emphasis added). During that step the Court is free to consider the characteristics of the accused device to “provide[] meaningful context . . . [for] claim construction.” *See, e.g., Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1326-27 (Fed. Cir. 2006). But that is not what TCP proposes here. Instead, TCP requests that claim construction be performed in view of an irrelevant hypothetical.

TCP and its expert Dr. Krames also argue that the terms “low” and “low-doped” are never used in the ’800 Patent’s specification. (§ III.B.2., *supra* at 22-23.) There is no requirement that the claims use identical terms to those used in the specification. *Eiselstein v. Frank*, 52 F.3d 1035, 1038 (Fed. Cir. 1995); *see also Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1345 (Fed. Cir. 2016). Instead, TCP concedes that the claim term “low-doped” corresponds with exemplary layers 35a. The description of that layer in the ’800 Patent can be used to inform the meaning of the claim term without improperly importing limitations from the specification into the claims. (*See* Feezell Decl. ¶¶38-41.)

4. TCP’s Sur-Reply Position

The parties’ dispute is not whether these terms must be defined with absolute or mathematical certainty, but whether these terms have **any** objective boundaries. Seoul’s arguments ring hollow considering that Dr. Feezell’s testimony injected more than a “modicum of uncertainty” into the terms’ scope. *See supra* §III.B.3, 25. While Dr. Feezell asserts that he has seen these terms used in “textbooks, journal articles, conference presentations and in discussions with colleagues,” (J. Ex. 22, ¶35), he provided no concrete examples and even testified that: “**I don’t know what the numerical boundaries are for a low-doped layer.**” J. Ex. 30, 92:2–4,

96:3–97:16; *see also* J. Ex. 26, ¶44 (Dr. Krames agreeing). Dr. Feezell’s inability to place objective boundaries on the dopant concentrations that a POSITA would understand to define the scope of “low-doped” or “doped” confirms these terms’ indefiniteness. *See e.g.*, J. Ex. 30, 88:16–92:6, 98:4–6, 101:16–20.

Seoul’s cited cases are distinguishable. *See supra* §III.B.3, 25–27. The Federal Circuit in *Guangdong* stated “we agree with Aspen that a [POSITA] in this field ‘can tell when a material has zero or a negligible amount of resilience without needing a mathematical definition.’” 936 F.3d at 1362. Here, neither expert can articulate the bounds of these terms with reasonable certainty. Moreover, this case is fundamentally different from *Guangdong* where there were many examples and known methods to assess the parameters at issue. *Id.* at 1363. Here, there is ***only one example in the specification*** for the Court to use in construing the terms.

Ironburg, *Niazi*, and *Exmark* are similarly inapplicable. The disputed claim term in *Ironburg*, “elongate member,” described a physical piece on a video game controller. 64 F.4th at 1285–86. Thus, the term’s scope was informed by its function, “to permit a wide range of people, having very different sized hands, to operate the member.” *Id.* at 1285. *Exmark* and *Niazi* also involved similar ***physical*** elements, with the scope informed by their function. *Exmark*, 879 F.3d at 1346 (a POSITA “would understand that the ‘substantially straight’ portions of the baffle must be sufficiently straight to connect two arcuate portions of the baffle”); *Niazi*, 30 F.4th at 1349. Here, the disputed terms relate to subject matter that is wholly-described by an easily-quantifiable metric: the dopant amount. Yet, Seoul proposes constructions that result in unbounded ranges for that metric leaving a POSITA uncertain as to what falls within the terms’ scope. *See Ironburg*, 64 F.4th at 1289 (“[T]he degree of precision necessary [for a term of degree] is a function of the nature of the subject matter.”); *Niazi*, 30 F.4th at 1347 (“It is whether the use of descriptive

phrasing in the claim results in a claim that ‘fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.’”) (quoting *Nautilus*, 572 U.S. at 901).

Seoul reliance on its *own infringement contentions* to support its construction is improper and irrelevant. *See supra* §III.B.3, 27–28; *SRI Int’l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1118 (Fed. Cir. 1985) (“A claim is construed in the light of the claim language, the other claims, the prior art, the prosecution history, and the specification, *not in light of the accused device.*”).

Finally, Seoul’s accusation that TCP did not “even acknowledge” the *Seoul Semiconductor Co. v. Feit Elec. Co.* case is wrong. *See supra* §III.B.3, 26. In its brief, TCP explained that the *Feit* case addressed an issue distinct from the one raised here. *See supra* §III.B.2, 23 n.5.

**C. “first and second low-doped layers . . . and the second low-doped layers include a hole concentration”
(U.S. Patent No. 9,799,800, Claim 14)**

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>at least one second [low-doped layer]</i>	“first and second low-doped layers . . . and the more than one second low-doped layers include a hole concentration . . .”	Construction of this term may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Incorporation by Reference: Because the term “low-doped layer” is itself subject to a claim-construction dispute, the adopted construction can be incorporated here by reference as indicated by the brackets in the table above.

Apparent Agreements: None.

Disputes: The sole dispute is whether the claim is broad enough to encompass a single “second low-doped layer” as permitted under Federal Circuit law and as indicated elsewhere in

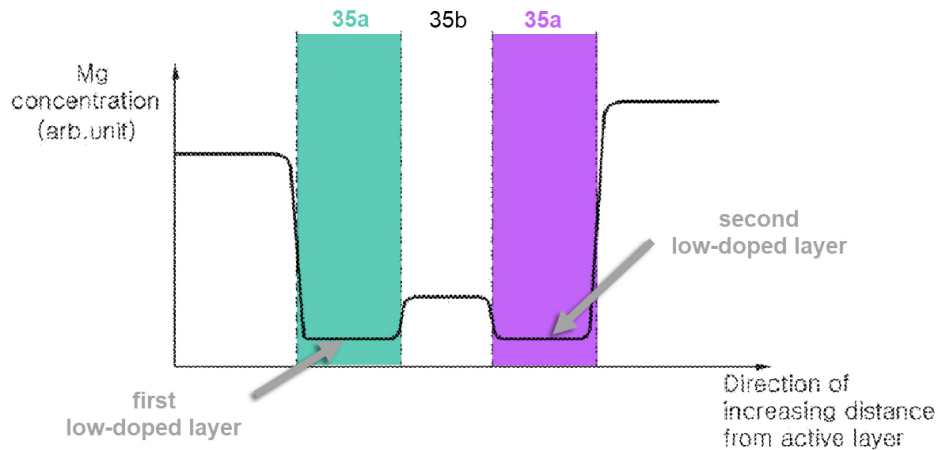
the claim, in the specification, and in the prosecution history (as proposed by Seoul) or instead to exclude that interpretation by adding the requirement “more than one” (as proposed by TCP).

Claim 14 uses the phrase “first and second low-doped layer” to introduce two singular layers (*i.e.*, a “first” and a “second”). (J. Ex. 9 (’800 Patent) at 12:18-19.) The claim later states, “the second low-doped layers include a hole concentration[.]” TCP asserts that the use of the word “layers” requires more than one second low-doped layer, *i.e.*, excludes the possibility of only one such layer. Under Federal Circuit law, however, “in context, the plural can describe a universe ranging from one to some higher number, rather than requiring more than one item.” *Versa Corp. v. Ag-Bag Int’l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004) (emphasis added) (citing *Dayco Products, Inc. v. Total Containment, Inc.*, 258 F.3d 1317, 1328 (Fed.Cir.2001)); *see also UTTO Inc. v. Metrotech Corp.*, 119 F.4th 984, 996 (Fed. Cir. 2024) (“In accordance with ordinary and customary meaning, we have stated that ‘we presume a plural term refers to two or more items,’ but ‘[t]hat presumption can be overcome when the broader context shows a different meaning applies.’”) (internal citations omitted). Here, the broader context indicates that a single second low-doped layer would be sufficient.

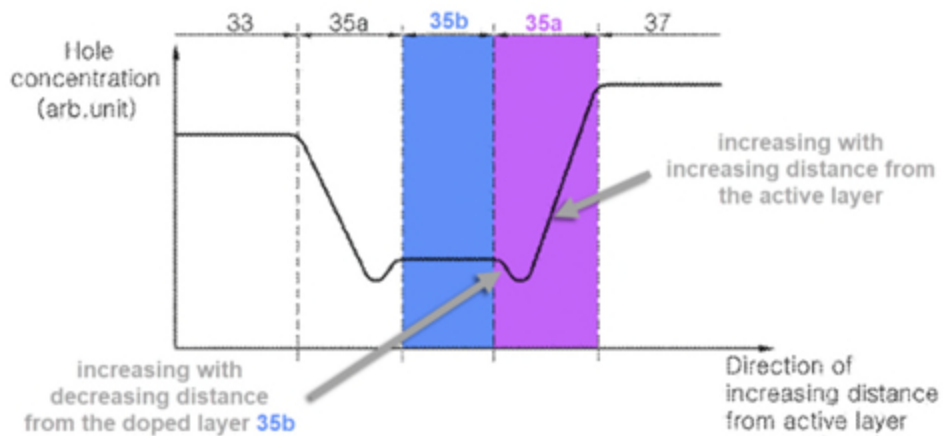
Starting with the language of Claim 14, the passage introducing the low-doped layers indicates that there is a single “first” and a single “second” low-doped layer. (J. Ex. 9 (’800 Patent) at 12:19-23, 12:27.) Indeed, Claim 14 recites “a doped layer disposed between the low-doped layers” (*i.e.*, between the first and second layers). (*Id.* at 12:20-21.) TCP’s proposal would require the “doped layer” to be “between” at least three layers, improperly manufacturing uncertainty. “[A] claim construction, if needed at all, should help resolve, not add to, uncertainty in the understanding the finder of fact is to use in applying a claim term.” *Promptu Sys.*, 92 F.4th at 1381.

The specification of the ’800 Patent also supports this view. Figure 2 (separated, annotated,

and with color added below) aligns with Seoul’s proposal. As the first graph (concentration of the dopant magnesium (Mg)) shows, there are two layers 35a (a first layer green and a second layer purple) with relatively low dopant levels.



Similarly, as the second graph (hole concentration) shows, the second low-doped layer 35a (purple) has a hole concentration that increases toward both ends – on its right (*i.e.*, increasing distance from the active layer) and on its left (decreasing distance to the doped layer 35(b) (blue)). Thus, the claims and specification consistently correlates to a singular “second” low-doped layer.



In contrast, TCP’s view that at least three low-doped layers (*i.e.*, a “first” and at least two “second” layers) finds no purchase in the intrinsic record. TCP’s proposal, therefore, conflicts with the ’800 Patent.

Finally, the relevant claim amendment during prosecution shows the applicant modified the phrase “the low-doped layers” by adding the qualifier “second.” The failure to delete the “s” from “layers” is understandable in context, and therefore, supports Seoul’s interpretation - *at least one second low-doped layer*.

Moreover, even if the plural form were found to exclude the singular as a matter of claim interpretation, that would simply indicate a correctable typographical error. *Pavo Sols. LLC v. Kingston Tech. Co., Inc.*, 35 F.4th 1367, 1373 (Fed. Cir. 2022) (“A district court may correct ‘obvious minor typographical and clerical errors in patents.’”) (citation omitted); *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003) (“Correction is appropriate ‘only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.’”). As discussed above, the patent and file history indicate that a single second low-doped layer was contemplated. The vestige of the prior phrase is precisely the type of obvious typographical error that a court may correct. *Kewazinga Corp. v. Microsoft Corp.*, No. 1:18-CV-4500-GHW, 2019 WL 3423352, at *25 (S.D.N.Y. July 29, 2019) (resolving an apparent “mismatch between the singular ‘an’ and the plural ‘cameras’” during claim construction).

2. TCP’s Answering Position

Claim 14 of the ’800 Patent unequivocally claims “second low-doped layers,” *plural*. See J. Ex. 9, Claim 14.⁶ Accordingly, TCP’s proposed construction merely enforces the plain language of the claim. See *Apple Inc. v. MPH Techs. Oy*, 28 F.4th 254, 261 (Fed. Cir. 2022) (“In accordance with common English usage, we presume a plural term refers to two or more items.”). Seoul, as

⁶ Claim 14 is the only instance in the claims where the term “second low-doped layers” is used separate and apart from “first and second low-doped layers.” J. Ex. 9, Claim 14. In that instance, it is clearly plural. *Id.*

evidenced by its proposed construction, intends to argue that a single “second low-doped layer” meets the limitation of claim 14. But this suggestion directly conflicts with the plural claim language. Because the parties disagree about whether a plural noun (“second low-doped layers”) also includes the singular (a single, “second low-doped layer”), this Court should construe this term so as to clarify that it is plural, as originally written, and does not include the singular, as proposed by Seoul. See *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (“When the parties present a fundamental dispute regarding the scope of a claim term, it is the court's duty to resolve it.”).

Unlike the cases cited by Seoul, the term is not used in a circumstance that requires changing the meaning based on context. In the *Versa* case, the court analyzed a means-plus-function term that recited “means ... *for creating* air channels,” and determined the term “channels” “does not imply that multiple channels are required by the claim.” *Versa Corp. v. Ag-Bag Int’l Ltd.*, 392 F.3d 1325, 1329–30 (Fed. Cir. 2004). “The context in which the patentee used the plural” was significant. *Id.* at 1330. Here, claim 14 requires “second low-doped layers” as part of the actual light emitting device (an apparatus claim), not as a component created as part of a method/process claim or means-plus-function claim. Seoul’s citation to *UTTO* confirms a presumption that a “plural term refers to two or more items” unless “overcome when the broader context shows a different meaning applies.” *UTTO Inc. v. Metrotech Corp.*, 119 F.4th 984, 996 (Fed. Cir. 2024). The *UTTO* court examined whether the term “‘a group of buried asset data points ...’ must consist of at least two data points” and noted that “in its most usual meaning in ordinary parlance, [the term] calls for two or more such points.” *Id.* at 994, 996. However, after a review of the intrinsic record, the Federal Circuit vacated the district court’s ruling and remanded for further claim-construction proceedings without explicitly construing the term. *Id.* at 997–98. In

the present case, the plain meaning of “layers”—unlike the term “a group”—is consistent and clear. *See Apple*, 28 F.4th at 261 (“we presume a plural term refers to two or more items.”).

Seoul argues that the plain meaning of the plural being two or more is overridden by the specification. *See supra* §III.C.1, 31–32. But, as Seoul similarly argues about other terms at issue in the ’800 Patent (*see* §III.B above), the specification makes clear that its embodiments are “exemplary,” “provided by way of example,” and that “these embodiments ... are not to be construed as limiting the present disclosure.” J. Ex. 9, 4:4–20, 10:24–36. For example, Seoul argues related to “low-doped layers” that its construction should extend far beyond the embodiments that are actually disclosed. *See supra* §III.C.1., 32–33. In this case, “second low-doped layers” needs no interpretation from the specification because the claim language is clear. Seoul put the public on notice of the scope of its patent claim, which is limited to multiple “second low-doped layers.” That the scope may have been poorly defined or was not carefully drafted is irrelevant to claim construction. *See Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004) (“[I]n accord with our settled practice we construe the claim as written, not as the patentees wish they had written it.”).

Alternatively, Seoul justifies its proposed construction as intended to correct a typographical error introduced during prosecution. The applicants, however, made that same “typographical error” every time this claim limitation is found in the applicants’ response to an office action that added this language to the claims. *See* J. Ex. 12, TCP-SEOUL-00007298. The applicants had multiple chances to correct this “typo,” but consistently used the plural version of the term instead. *Id.*, TCP-SEOUL-00007302, TCP-SEOUL-00007303. In addition, the examiner specifically referenced the claim limitation containing the plural term “second low-doped layers” as the distinguishing feature over the prior art. *Id.*, TCP-SEOUL-00007316. Thus, the prosecution

history supports the applicants' intent to claim multiple "second low-doped layers." This is not the sort of claim language "mismatch" that requires correction via construction by the Court. *See Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003) ("A district court can correct a patent ***only if*** (1) ***the correction is not subject to reasonable debate*** based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.").

Consistent with *Phillips*, the plain and ordinary meaning of the claim language should govern the scope of this claim. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) ("[W]ords of a claim 'are generally given their ordinary and customary meaning'" (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996))). Accordingly, TCP proposes a construction for "second low-doped layers" that would clarify the plural nature of this term and reject Seoul's attempts to interpret the term in a manner inconsistent with its plain meaning. *See Apple*, 28 F.4th at 261 ("we presume a plural term refers to two or more items.").

3. Seoul's Reply Position

Seoul's opening brief explained that the recitation "second low-doped layers" within the larger phrase "a p-type semiconductor layer formed over the active layer, wherein the p-type semiconductor layer includes first and second low-doped layers and a doped layer disposed between the low-doped layers and the second low-doped layers include a hole concentration decreasing with increasing distance from the active layer and then increasing with decreasing distance to the doped layer" means *at least one second low-doped layer*. (§ III.C.1., *supra* at 31-33.) Seoul explained, for example, that by reciting "first and second low-doped layers" and a "doped layer disposed between the low- doped layers," the express language of claim 14 strongly suggests the claim encompasses a single "second low-doped layer." (*Id.*) Next, Seoul provided an

analysis of the specification and drawings, which repeatedly disclose a single first low-doped layer and a single second low-doped layer. (*Id.*) And Seoul also showed the origin of the disputed language within the prosecution history of the '800 Patent. (*Id.*)

TCP's responds that the disclosure relied upon by Seoul from the specification is merely "exemplary." (§ III.C.2., *supra* at 35.) In doing so, TCP effectively ignores the surrounding claim language, which expressly supports the singular. And as importantly, TCP fails to dispute that its construction excludes every single disclosed embodiment. (*Id.* at 33-36.) As the Federal Circuit has long held, "a construction that excludes all of the embodiments of an invention is 'rarely, if ever, correct.'" *Nellcor Puritan Bennett, Inc. v. Masimo Corp.*, 402 F.3d 1364, 1368 (Fed. Cir. 2005) (citation omitted). Indeed, the Court has held that "[w]e require 'highly persuasive' evidence to read claims as excluding a preferred embodiment of the invention." *CUPP Computing*, 53 F.4th at 1381 (citation omitted). Rather than highly persuasive evidence, TCP asserts "the scope may have been poorly defined or was not carefully drafted." (§ III.C.2., *supra* at 35.) By ignoring the contrary evidence and relevant caselaw, TCP fails to justify its proposal.

The lone decision cited by TCP to support its position is *Apple Inc. v. MPH Technologies Oy*, 28 F.4th 254 (Fed. Cir. 2022). (*See* § III.C.2., *supra* at 33.) In contrast to the scenario presented here, in *Apple* the Federal Circuit found no support for the singular construction within the claim language or written description. 28 F.4th at 262. Instead, the defendant relied on a nonexistent "presumption" that the plural includes the singular, an argument that the Federal Circuit rejected. *Id.* Rather than a flawed presumption, Seoul relies on support from the claims, specification, file history, and the undisputed conclusion that TCP's construction would exclude all embodiments disclosed in the relevant patent. TCP's contrary position should be rejected.

4. TCP's Sur-Reply Position

Seoul argues that there cannot be multiple “second low-doped layers” because the “specification and drawings” only disclose two “low-doped layers” that Seoul identifies as two “undoped layers 35a.” *See supra* §III.C.3, 36–37. But, Seoul ignores the specification’s teaching that an additional “***undoped layer*** can be formed between a clad layer and the hole injection layer or between the hole injection layer and the p-type contact layer.” J. Ex. 9, 4:28–30. The specification expressly allows for embodiments with more than two “low-doped layers.”

At least for this reason and because they involved constructions that departed from the plain meaning, Seoul’s reliance on *Nellcor* and *CUPP Computing* is misplaced. *See supra* §III.C.3, 37; *Nellcor*, 402 F.3d at 1368 (reversing a construction of “filtered” as requiring “absolute” noise removal, instead of merely “effective [noise] removal”); *CUPP Computing*, 53 F.4th at 1381 (affirming a construction of “different” processors as not requiring them to be remote from one another). Here, it is *Seoul* whose interpretation of this term is inconsistent with the presumptive plain and ordinary meaning. This case is more like *Chef America*, in which the plain and ordinary meaning claim construction led to a “nonsensical result” (i.e., cookies resembling “a charcoal briquet”) but was nonetheless correct because the claim’s words “mean exactly what they say.” 358 F.3d at 1373–74; *See supra* §III.C.2, 35.

Next, Seoul asserts that “the surrounding claim language” “expressly supports” construing the term “second low-doped layers” as being “singular,” but this is overreaching as the claim language is, at best, ambiguous. *See supra* §III.C.3, 37. “Second low-doped layers” appears three times in claim 14 and its dependents. Claim 14 requires that “the p-type semiconductor layer includes first and second low-doped layers” and “the second low-doped layers include a hole concentration...” Claim 17 requires “the sum of the thicknesses of the first and second low-doped

layers and the doped layer is...” None of these claims include a reference to a singular “second low-doped layer.” Rather, the surrounding claim language is unclear, a situation in which adoption of the prevailing presumption is appropriate. *Apple*, 28 F.4th at 261 (“[W]e presume a plural term refers to two or more items.”).

**D. (a) “groove”
(b) “plurality of sub-grooves” / “sub-groove(s)”
(U.S. Patent No. 8,659,050, Claims 1, 2 and 12)**

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>a set of long narrow channels or depressions formed on a lead frame each having a triangular cross-section and filled with resin</i> ⁷	groove: “opening formed in a surface of an object that reduces the thickness of the object within the opening”	Construction of [these] term[s] may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.
	sub-groove(s): “opening(s) formed within a groove formed in a surface of an object that reduce(s) the thickness of the object within the opening(s)”	

1. Seoul’s Opening Position

Apparent Agreements: None.

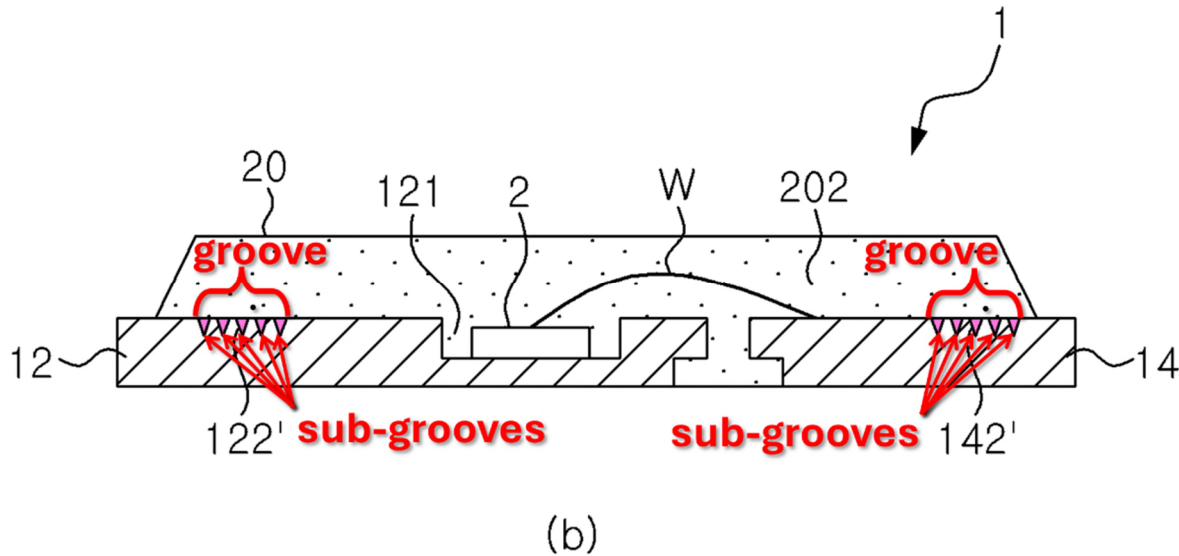
Disputes: There are two disputes (1) the relationship between the terms “groove” and “sub-grooves”; and (2) whether the ordinary meaning implies a specific shape (*i.e.*, long and narrow) as proposed by Seoul or instead encompasses any “opening” as proposed by TCP.

The proper starting point is the language of the claims themselves. *Phillips*, 415 F.3d at

⁷ The parties have been working together to clarify or narrow the scope of disputes that require Court resolution. In that vein, both sides have presented modified positions during this process. To reflect those changes, the modified constructions are colored red in the relevant tables at the beginning of each section.

1314. The relevant passage here reads “at least one of the first and second lead frames comprises a groove which is formed thereon . . .; and the groove comprises a plurality of sub-grooves, each sub-groove having a triangular cross-section.” (J. Ex. 3 ('050 Patent) at 7:7-11.) In patent law, the phrase [term A] comprises [term B] means that [term A] must include or contain at least [term B]. *Crystal Semiconductor Corp. v. TriTech Microelectronics Int'l, Inc.*, 246 F.3d 1336, 1347 (Fed. Cir. 2001); *see also Samsung Elecs. Co. v. Power2B, Inc.*, No. 2023-1629, 2025 WL 957287, at *3 (Fed. Cir. Mar. 31, 2025); M.P.E.P. §2111.03 (“The transitional term ‘comprising’, which is synonymous with ‘including,’ ‘containing,’ or ‘characterized by,’ is inclusive or open-ended and does not exclude additional, unrecited elements or method steps.”) (available at <https://www.uspto.gov/web/offices/pac/mpep/s2111.html>). TCP’s proposal narrows the broader relationship “comprises” to physically “formed within.” Using underlining to indicate TCP’s construction for “groove,” the composite proposal for TCP’s interpretation of the term “sub-grooves” would read “opening(s) formed within a[n] opening formed in a surface of an object that reduces the thickness of the object within the opening formed in a surface of an object that reduce(s) the thickness of the object within the opening(s).” No jury could apply this language.

Moreover, TCP’s proposal conflicts with the corresponding portions of the specification. In particular, the recited “triangular” structures in Claim 1 correspond to elements 122' and 142' (pink) in figure 8(b) (annotated and with color added below).



These triangular sub-grooves 122' and 142' are each part of a larger structure, which in the language of the claims corresponds with the term “groove.” Thus, “sub” here is a “prefix” indicating that structures are part of the larger whole. (J. Ex. 16 (*Merriam Webster's* (10th ed., 1997)) at 1170 (defining “sub.” in relevant part as “subordinate portion of : subdivision of <subcommittee> <subspecies>”); J. Ex. 17 (*Random House* (2d ed., 1997)) at 1891 (“sub . . . a prefix . . . and used with the meaning ‘under,’ ‘below,’ ‘beneath’ (*subalpine*; *substratum*), ‘slightly,’ ‘imperfectly,’ ‘nearly’ (*subcolumnar*; *subtropical*), ‘secondary,’ ‘subordinate’ (*subcommittee*; *subplot*).”).)

A secondary dispute relates to the shape required. TCP asserts that any “opening” should suffice. The ordinary meaning of the term, however, implies more than a mere opening. Instead, the shape must be long and narrow. (See, e.g., J. Ex. 16 (*Merriam Webster's* (10th ed., 1997)) at 514 (“groove . . . a long narrow channel or depression”); Ex. 17 (*Random House* (2d ed., 2001)) at 842 (“groove . . . a long, narrow cut or indentation in a surface”; Ex. C (*McGraw Hill Dictionary of Scientific and Technical Terms* (5th ed., 1994)) at 879 (groove . . . A long, narrow channel in a surface”).) TCP’s proposed scope encompassing any “opening” regardless of shape saps the claim term of any relationship to ordinary meaning and therefore should be rejected.

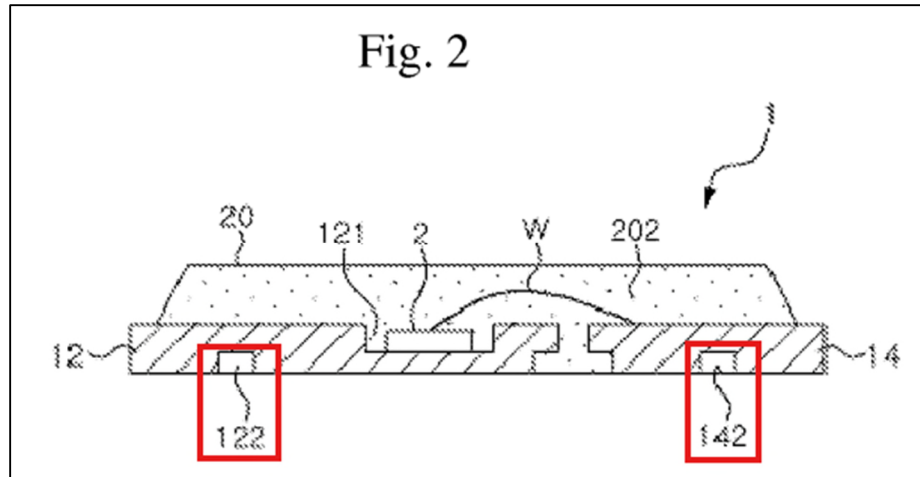
2. TCP's Answering Position

TCP's constructions of "groove" and "sub-groove(s)"⁸ are consistent with the intrinsic evidence, including the claim language and the specification.⁹ *Phillips*, 415 F.3d at 1315 ("[S]pecification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'") (quoting *Vitronics Corp.*, 90 F.3d at 1582). Claim 1 recites an LED package comprising a first and second lead frame, an LED chip, and a resin where "at least one of the first and second lead frames comprises a **groove** ... and the **groove** comprises a plurality of **sub-grooves**, each **sub-groove** having a triangular cross-section." J. Ex. 3, claim 1.

TCP proposes a construction for "groove" based on language taken directly from the specification. The specification describes an LED package that may include various features "to increase a bonding force between the first and second lead frames and the encapsulation material." J. Ex. 3, 2:30–37; *see also id.*, 3:8–13. In one embodiment, which Seoul does not address in its Opening Brief, the specification discloses an LED package that may "include **openings** or grooves **formed on an** upper or lower **surface** of the first or second lead frame [i.e., **an object**]." *Id.*, 2:30–32 (modifications showing specification language included in TCP's proposed construction); *see also id.*, 3:8–13, 4:47–50, FIG. 2 (shown below with "grooves" [122] and [142] annotated in red), FIGS. 3–6.

⁸ Although Seoul only provided a proposed construction for "plurality of sub-grooves," TCP originally proposed "sub-groove(s)" for construction because both "sub-groove" and "sub-grooves" appear in the claims. *See* J. Ex. 3, claim 1 ("...plurality of **sub-grooves**, each **sub-groove**..."), claim 12 ("...the **sub-grooves** are formed..."). Thus, TCP's construction is applicable to all instances of the term in the claims, while Seoul's only applies to one.

⁹ TCP does not necessarily dispute that the shape of a "groove" or "sub-groove(s)" should be "long [and] narrow." Thus, TCP does not address Seoul's arguments on this issue (*see supra* §III.D.1, 39) but reserves the right to do so in a subsequent brief, if necessary.



Further, the specification discloses that the grooves are “formed by *reducing the thickness of* predetermined regions of the lower surfaces [i.e., *the object within the opening*].” *Id.*, 4:55–59. Accordingly, TCP’s construction of “opening formed in a surface of an object that reduces the thickness of the object within the opening” is consistent with the description and illustration of a “groove” in the specification.

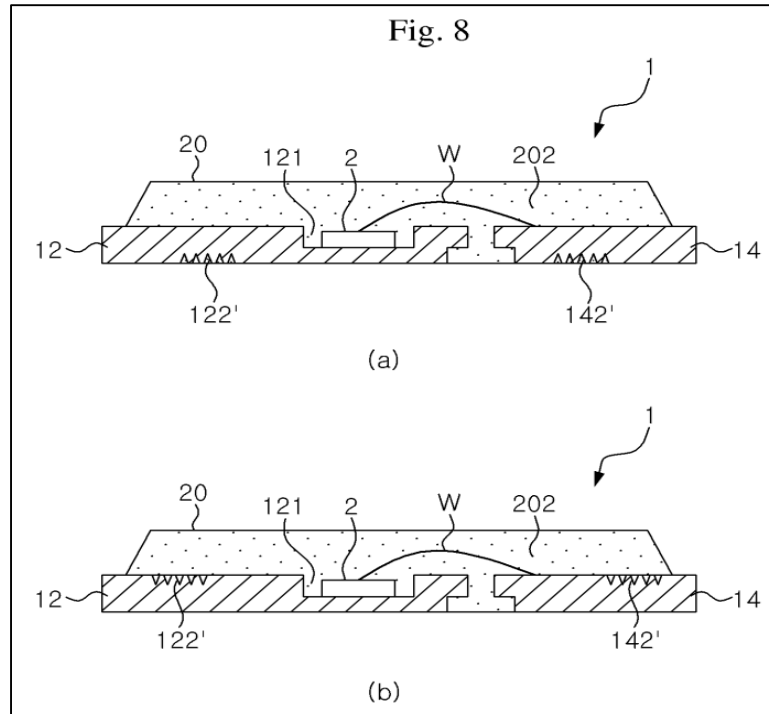
Seoul, however, ignores that the claims recite, and the specification describes and illustrates, a “groove” separately from “sub-groove(s)” and proposes the same construction for the two different terms: “a set of long narrow channels or depressions.” *See supra* §III.D.1, 39–41. By doing so, Seoul’s proposal writes the term “groove” out of the claim entirely. If “groove” and “sub-groove(s)” are given identical meanings, the claim’s recitation of “groove” becomes redundant. The claims could have been drafted to only recite “a plurality of sub-grooves,” but they were not. Instead, the claims recite both a “groove” and “a plurality of sub-grooves,” and these two separate terms should be construed differently in view of the intrinsic evidence.

Seoul’s proposal also is facially unhelpful since it defines a singular term, “groove,” as a plural “set” of features. Furthermore, in an effort to support its position, Seoul states a general

proposition related to the term “comprising” and includes citations to two cases¹⁰ and a USPTO rule (*see supra* §III.D.1, 40) but then improperly applies that proposition to the specific terms. Seoul argues that “[i]n patent law, the phrase [term A] comprises [term B] means that [term A] must include or contain at least [term B].” *Id.*, 10. The proper application of Seoul’s “[term A]/[term B]” rule would result in “the groove must include or contain at least a plurality of sub-grooves.” Therefore, Seoul cannot rely on this rule to arrive at its current proposal **construing** “groove” and “sub-groove(s)” identically, thereby **equating** the two terms. Adopting Seoul’s constructions would result in circular and nonsensical claim language. When inserting the language of Seoul’s proposed constructions back into the claim—the claim would recite “the set of long narrow channels or depressions comprises a set of long narrow channels or depressions.” The Court should reject this wholly unhelpful proposal. Instead, the Court should adopt TCP’s construction of “groove.”

With respect to “sub-groove(s),” the specification does not provide specific guidance. The specification does not use the term “sub-groove” other than in the claims. Although Seoul asserts that “the recited ‘triangular’ structures in Claim 1 correspond to elements 122’ and 142’ (pink) in figure 8(b)” (*see supra* §III.D.1, 40–41), the specification does not explicitly connect the recited “sub-grooves” and the “scratches” described with respect to FIG. 8 (shown below):

¹⁰ The cases cited by Seoul are inapposite as neither holds that two claim terms connected by “comprising” may be equated or that such terms should be construed identically. *See Crystal Semiconductor Corp. v. TriTech Microelectronics Int’l, Inc.*, 246 F.3d 1336, 1347-48 (Fed. Cir. 2001) (discussing the transitional phrase “comprising” as “open” but ultimately analyzing the transitional phrase “having” in the claim at issue); *see Samsung Elecs. Co., Ltd. v. Power2B, Inc.*, No. 2023-1629, 2025 WL 957287, at *3 (Fed. Cir. Mar. 31, 2025) (discussing claim terms “includes” and “comprises” but ultimately analyzing whether the claim at issue required “at least one” element or “two or more” elements).



J. Ex. 3, FIG. 8, 4:59–62 (“Alternatively, instead of forming the openings or grooves, as shown in FIG. 8(a) and FIG. 8(b), **scratches 122’ and 142’** may be formed on the upper or lower surfaces of the first and second lead frames 12, 14.”), 2:34–37.

Even assuming that FIG. 8’s “scratches” were the intended structure claimed as “sub-grooves,” the specification describes the “scratches” only as an alternative to a “groove.” J. Ex. 3, 2:34–37. The specification provides that “[a]lternatively, **instead of forming the openings or grooves**, ... scratches 122’ and 142’ may be formed.” *Id.*, 4:59–64. The specification does not describe any embodiment with a “groove” (shown in FIG. 2, **not** in FIG. 8) including, containing, or characterized by either a “plurality of sub-grooves” or even “scratches” (shown in FIG. 8, **not** in FIG. 2). Given the lack of support in the specification, Seoul’s assertion that the “triangular sub-grooves 122’ and 142’ are each part of a larger structure” and “part of the larger whole” (*see*

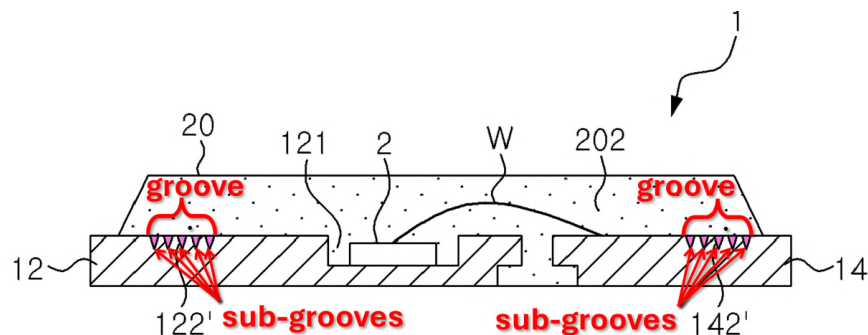
Patent), claim 1 (emphasis added).) Rather than address the full term, what TCP seeks is to improperly address the terms “groove” and “sub-grooves” in the isolation. *See Hockerson-Halberstadt, Inc. v. Converse Inc.*, 183 F.3d 1369, 1374 (Fed. Cir. 1999) (“Proper claim construction . . . demands interpretation of the entire claim in context, not a single element in isolation.”).

Indeed, TCP asserts that Seoul “writes the term ‘groove’ out of the claim entirely.” (§ III.D.2., *supra* at 43.) This argument ignores the express language of claim 1, which provides four distinct requirements for the recited “groove”: (1) it is formed on a lead frame; (2) it is filled with resin; (3) it comprises a plurality of sub-grooves; and (4) the sub-grooves each have a triangular cross section. (J. Ex. 3 (’050 Patent), claim 1.) TCP’s contrary argument is based on isolating the words “groove” and “sub-grooves,” which is not how proper claim construction is performed. *See ACTV*, 346 F.3d at 1088 (“the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms”). Indeed, the appellant in *Pause Tech., LLC v. TiVo, Inc.*, 419 F.3d 1326, 1331 (Fed. Cir. 2005), made a similar argument, urging that the term “circular storage buffer” should not be interpreted to include aspects of “a separate claim element” that “appears in a later portion of the claim.” *Id.* The Court disagreed, noting that the “clause and other language appearing later in the claim detail” the necessary characteristics of the recited structure. Here, that requires considering all recited characteristics of the “groove.”

In addition, Seoul’s opening brief explained how the use of the word “comprising” to link the word “groove” with “sub-groove” has a well-understood meaning in patent law. (§ III.D.1., *supra* at 40.) TCP largely agrees with Seoul’s position but concludes that “proper application of Seoul’s ‘[term A]/[term B]’ rule would result in ‘the groove must include or contain at least a

plurality of sub-grooves.” (§ III.D.2., *supra* at 43-44 (emphasis omitted).) Because the use of the term “comprising” is presumptively open-ended, *i.e.*, does not exclude additional elements (*HZNP Medicines LLC v. Actavis Laboratories UT, Inc.*, 940 F.3d 680, 692 (Fed. Cir. 2019)), the language “include or contain at least” merely reflects the intrinsic nature of such terms. Thus, TCP’s explanation supports rather than contradicts the relationship between “groove” and “sub-grooves.”

However, to avoid the confusion inherent to TCP’s request to construe the terms “groove” and “sub-groove” in isolation, Seoul has modified its construction to clarify that the proper construction for the complete phrase in context is – *a groove is set of long narrow channels or depressions formed on a lead frame each having a triangular cross-section and filled with resin.* This construction interprets the term “groove” in the context of the claim language. Moreover, this construction “stays true to the claim language and most naturally aligns with the patent’s description of the invention” (*Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)) as shown, for example, in figure 8(b). The annotated version of figure 8(b) reproduced below from Seoul’s opening brief explains that correspondence.



(b)

Finally, TCP complains that the term “sub-grooves” is not used in the specification of the ’050 Patent. As discussed above, there is no requirement that the claims use the same terms as the specification. *Blue Calypso*, 815 F.3d at 1345. Indeed, TCP’s argument here appears to present a

previously undisclosed written-description challenge rather than an actual claim construction argument. (*See* § III.D.2., *supra* at 45 (referring to “the lack of support in the specification”).) Moreover, this misdirected argument ignores the long-standing holding that drawings alone can provide sufficient written-description support. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1564 (Fed. Cir. 1991); *see also Revolution Eyewear, Inc. v. Aspex Eyewear, Inc.*, 563 F.3d 1358, 1366 (Fed. Cir. 2009). Thus, the proper construction here is the one that aligns with the ’050 Patent (including the drawings) rather than TCP’s unsupported proposal using the vague term “opening.” Indeed, nowhere did TCP seek to justify the use of that term to replace “groove” and “sub-groove.” Instead, TCP’s analysis is limited to criticizing Seoul’s proposal and supporting analysis.

4. TCP’s Sur-Reply Position

The specification describes two **alternative** embodiments—(1) that of FIG. 2 having a “groove” and no “sub-grooves;” and (2) that of FIG. 8 having “sub-grooves” and no “groove.”

Seoul’s argument ignores the first embodiment and incorrectly describes the second. *See supra* §III.D.1, 40–41; *supra* §III.D.3, 48–49. Because Seoul limited its consideration of the intrinsic record to the embodiment in FIG. 8(b), Seoul’s construction does not “most naturally align[] with the patent’s description of the invention.” *See supra* §III.D.3, 48 (quoting *Renishaw*, 158 F.3d at 1250), 13. Moreover, Seoul’s annotations of and arguments regarding FIG. 8(b) (*see supra* §III.D.1, 40–41; *supra* §III.D.3, 48) are unsupported attorney argument that misstates the specification.

Seoul sidesteps that the claims recite ***both*** a “groove” ***and*** “sub-groove(s).” *See supra* §III.D.1, 40–41, *supra* §III.D.3, 47–49. The claims could have been drafted to only recite “a plurality of sub-grooves,” but were not. *See supra* §III.D.2, 43. Instead, the applicant added the additional limitation of “a plurality of sub-grooves” to claim 1 rather than replacing the recited

“groove” with “a plurality of sub-grooves.” *Compare* J. Ex. 15, TCP-SEOUL-00005167 *with id.*, TCP-SEOUL-00005382. Seoul’s attempt to write the term “groove” out of the claim is improper because it ignores this prosecution history (*id.*) and misinterprets the described embodiments.

TCP is not “isolating” the terms “groove” and “sub-groove(s).” *See supra* §III.D.3, 47. TCP asks that **both** terms be construed considering the full claim language, specification, and prosecution history. *Pause Tech.* is inapposite as TCP is not seeking a construction of “groove” that excludes “aspects” or “characteristics” of the recited “sub-grooves.” Reply, 11–12 (citing *Pause Tech.*, 419 F.3d at 1331). It is Seoul who reframes the dispute to avoid addressing the relationship between the “groove” and “sub-groove(s).” *See supra* §III.D.3, 47–49.

**E. “at least one of the sidewalls comprising an inset sidewall partially defining an outer fixing space”
(U.S. Patent No. 9,147,821, Claims 1 and 5)**

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
<i>one or more of the sidewalls contain an overhang, with the space under the overhang being part of an [outer fixing space]</i>		

TCP has accepted Seoul’s proposed construction, and therefore, this section is omitted.

F. “fixing space”
(a) “outer fixing space”
(b) “inner fixing space”
(U.S. Patent No. 9,147,821, Claims 1, 2, and 5)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
(a) <u>outer fixing space</u> Plain and ordinary meaning, or alternatively: <i>a space that includes the area under the overhang of the [inset sidewall]</i>	“opening perforating and/or formed through a body in a vertical direction (<i>i.e.</i> , a direction normal to the surface of a light-emitting diode chip)”	Construction of [these] term[s] may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.
(b) <u>inner fixing space</u> Plain and ordinary meaning, or alternatively: <i>an opening extending from the first surface to the second surface</i>		

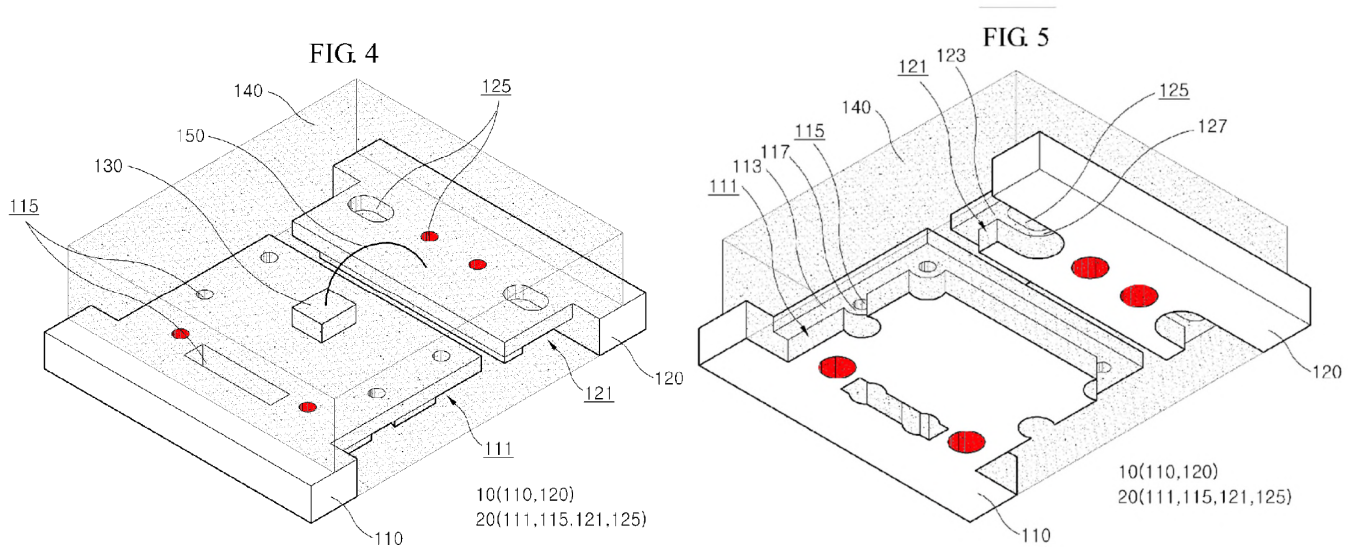
1. Seoul’s Opening Position

Incorporation by Reference: Because the term “inset sidewall” is itself subject to a claim-construction dispute, the adopted construction can be incorporated here by reference.

Apparent Agreements: None.

Disputes: The central dispute is whether to treat the separately recited “outer fixing space” and “inner fixing space” as distinct (as proposed by Seoul) or instead to impose the identical 23-word construction on both (as proposed by TCP).

The ’821 Patent describes a first embodiment (corresponding to figures 1 through 3) that includes an “outer” type of “fixing space” including the spaces under the overhangs in figure 2. (J. Ex. 5 (’821 Patent) at 3:33-40.) In a separate embodiment (corresponding to figures 4 through 6), the lead frames “further include[] one or more inner fixing holes 115 and 125 formed through the bodies of the first and second lead frames 110 and 120 in the vertical direction.” (*Id.* at 4:29-33.) Examples of this “inner” type are indicated in red in the figures below.



In contrast to the '821 Patent's two distinct types of "fixing space" in the claims and specification, TCP's proposal would appear to encompass only the "inner." TCP's construction, therefore, must be rejected as it does not give meaning to all terms in the claim by ignoring the difference between the "outer" and "inner" forms of fixing spaces. "Claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so." *Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (citing cases); *see also In re Power Integrations, Inc.*, 884 F.3d 1370, 1376 (Fed. Cir. 2018) (citing cases).

Moreover, TCP's construction adds confusion rather than clarity. The 23-word construction, which includes "and/or" and a parenthetical beginning with the Latin "*i.e.*", would be the opposite of helpful to the jury. Indeed, the construction will lead predictably to additional arguments regarding what portions of the proposal are requirements and what portions merely present excess verbiage. As discussed above, "a claim construction, if needed at all, should help resolve, not add to, uncertainty in the understanding the finder of fact is to use in applying a claim term." *Promptu Sys.*, 92 F.4th at 1381 (emphasis added).

To the extent that express constructions are required, therefore, "outer fixing space" means

a space that includes the area under the overhang of the inset sidewall and “inner fixing space” means an opening extending from the first surface to the second surface.

2. TCP’s Answering Position

TCP’s construction of “fixing space” is consistent with the intrinsic evidence, including the claim language and the specification. *Phillips*, 415 F.3d at 1315 (“[S]pecification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’”) (quoting *Vitronics*, 90 F.3d at 1582). TCP initially proposed construing the term “fixing space” and this is the term for which TCP has proposed a construction. Seoul, however, insists on construing “outer fixing space”¹² and “inner fixing space” separately, but that mischaracterizes the dispute. TCP does not dispute that “inner” and “outer” refer to the relative location of the “fixing space” on the lead frame. Thus, the dispute between the parties centers on the term “fixing space,” as TCP originally proposed.

The specification describes a “fixing space *perforating a body ... in a vertical direction*” and “fixing spaces *formed through bodies ... in a vertical direction.*” J. Ex. 5, Abstract, 3:11–13 (modifications showing specification language included in TCP’s proposed construction); *see also id.*, 1:19–24, 1:59–64, 2:1–2. The claims of the ’821 Patent recite a “fixing space” in the context of “an outer fixing space” and “an inner fixing space.” *Id.*, claims 1, 2, 5. Similarly, the specification explains that “the fixing spaces include outer fixing holes 111 and 121” (*id.*, 3:22–26) and that “the fixing space 20 further includes one or more inner fixing holes 115 and 125” (*id.*, 4:29–33). According to this disclosure, and contrary to Seoul’s assertions, both the “inner fixing

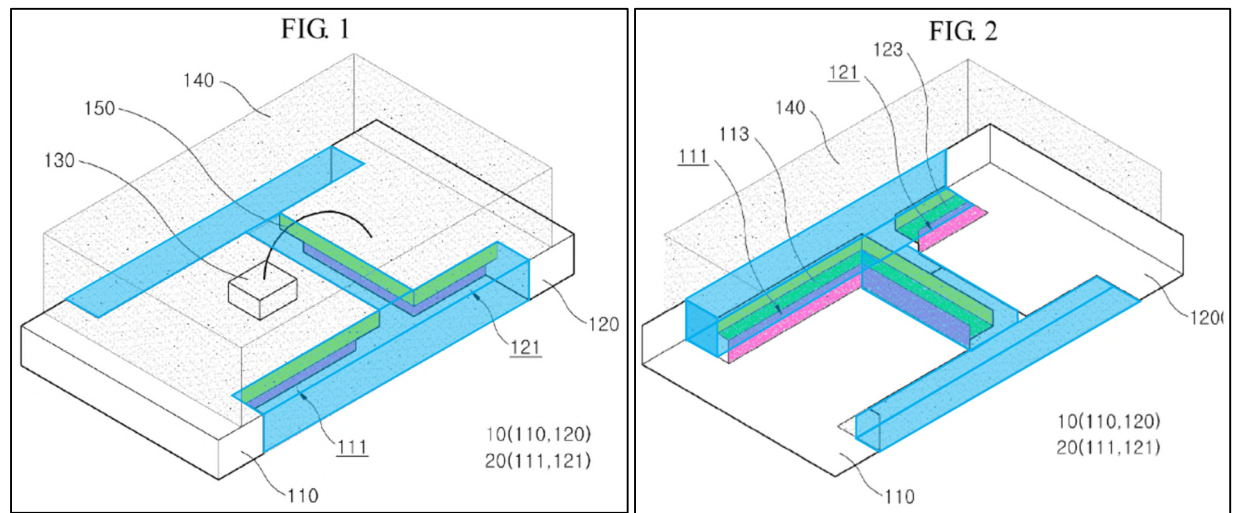
¹² Seoul states that “the term ‘inset sidewall’ is itself subject to a claim-construction dispute.” *See supra* §III.F.1, 51. TCP is not aware of any such dispute regarding “inset sidewall.” However, to the extent Seoul clarifies this statement in its reply brief, TCP reserves the right to address it at that time.

holes” and “outer fixing holes” are part of or types of “fixing spaces” and would be encompassed in TCP’s proposal of “opening *perforating and/or formed through* a body in a vertical direction (i.e., a direction normal to the surface of a light-emitting diode chip).” *See supra* §III.F.1, 52. Accordingly, the Court should adopt TCP’s proposed construction, which construes “fixing space,” in both its “inner” and “outer” form, according to the intrinsic record.

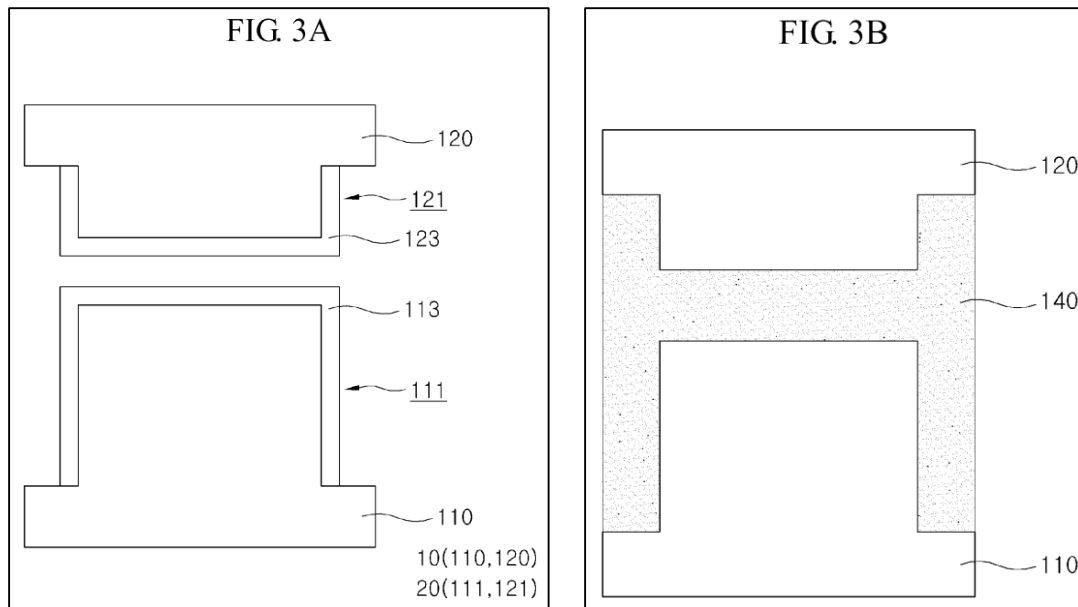
Regarding the clarity of TCP’s construction, TCP included the “and/or” phrase to reflect the differing language used in the specification to describe the “fixing space.” Namely, in some instances, the specification describes the “fixing space” as “perforating a body [of a lead frame] in a vertical direction.” J. Ex. 5, Abstract; *see also id.*, 1:65–2:2. In other instances, the specification describes “forming a fixing space through the lead frame.” *Id.*, 1:19–22; *see also, e.g., id.*, 1:59–62, 2:7–12, 3:11–13, 3:22–32, 5:52–57. While TCP maintains that the “and/or” phrase in its proposed construction is both clear and helpful, TCP would be amenable to a construction of “an opening formed through a body in the vertical direction...,” given that the specification less frequently describes a “fixing space” as “perforating” the lead frames.

Further, TCP included the “i.e.” phrase to better define the “vertical direction” in the context of the devices described in the specification. The specification describes a “fixing space” as either perforating or being formed through a body “in a vertical direction” six times. J. Ex. 5, Abstract, 2:1–2, 3:11–13, 4:29–33, 5:55–57, 7:18–19 (recited in claim 13, which is not at issue). However, the specification never clarifies which direction is “vertical.” Thus, TCP proposed that “the vertical direction” be defined as “a direction normal to the surface of a light-emitting diode chip.” To the extent the Court and Seoul are satisfied that the specification’s description of “the vertical direction” is adequate, TCP would be amenable to a construction of “an opening perforating and/or formed through a body in the vertical direction.”

Regarding Seoul's proposals, the two constructions for "outer fixing space" and "inner fixing space" are inconsistent and are either overly narrow or overly broad. First, for "outer fixing space," Seoul's proposal is that the outer fixing space *only* "includes the area under the overhang of the inset sidewall." *See supra* §III.F.1, 52–53. This construction is incomplete at least because it excludes the space outside of the non-inset sidewall and between the "T"-shaped ends of the lead frames depicted in FIGS. 1 and 2 (shown below in blue annotations).



Moreover, Seoul's construction is contradicted by the specification. For example, FIG. 3A shows the fixing spaces 20(111, 121) as including at least some of the space outside of the overhangs [stepped portions 113 and 123]. J. Ex. 5, FIG. 3A. Similarly, FIG. 3B shows the resin 140 filling the entire space between the two lead frames 110 and 120, not only the space under the overhangs. *Id.*, FIG. 3B; *see also id.*, FIGS. 4, 5, 6A, 6B.



Second, Seoul’s proposed construction of “inner fixing space” omits any requirement that the “fixing space” be located in a way that can be described as “inner.” Seoul’s construction is so broad that it would encompass any “fixing space,” whether positioned on the outer or inner portion of a lead frame, so long as the “fixing space” extends from a “first surface” to a “second surface.” According to the specification, this construction would encompass all of the fixing spaces whether they are described as “inner fixing holes,” “outer fixing holes,” or simply “fixing spaces.” Thus, while the parties’ constructions overlap in part because Seoul’s proposed construction of “inner fixing space” is closest to TCP’s construction of “fixing space,” TCP does not agree that this construction is properly applied to “inner fixing space” alone. Because TCP’s construction of “fixing space” is consistent with the intrinsic evidence, and Seoul’s proposed constructions are not, the Court should adopt TCP’s construction.

3. Seoul’s Reply Position

TCP accuses Seoul of “mischaracteriz[ing] the dispute” by “insist[ing] on construing ‘outer fixing space’ and ‘inner fixing space’ separately.” (§ III.F.2., *supra* at 53.) In effect, TCP asserts that by originally selecting only the two-word term “fixing space,” it foreclosed Seoul from

presenting an analysis based on the claims as a whole. (*Id.*) The Court should reject this baseless argument, which finds to support in law, rule, or logic. As explained above, proper claim construction does not consider isolated terms but rather the complete context in which they are recited. *Hockerson-Halberstadt*, 183 F.3d at 1374 (Fed. Cir. 1999). TCP’s assertion that Seoul “mischaracterize[ed] the dispute,” therefore, is impertinent and false.

TCP next asserts that “[t]he specification describes a ‘fixing space perforating a body in a vertical direction’ and ‘fixing spaces formed through bodies . . . in a vertical direction.’” (§ III.F.2., *supra* at 54.) TCP appears to be relying on the unstated and unsupported argument that the ’821 Patent provides an express definition of “fixing space” that should be imposed on the claims. (*Id.*) TCP, however, did not remotely establish that the patent “‘clearly set forth a definition of the disputed claim term’ other than its plain and ordinary meaning.” *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). Instead, TCP excerpts isolated descriptions from the written description while pointedly ignoring the broader disclosure of two distinct forms of fixing spaces – inner and outer.

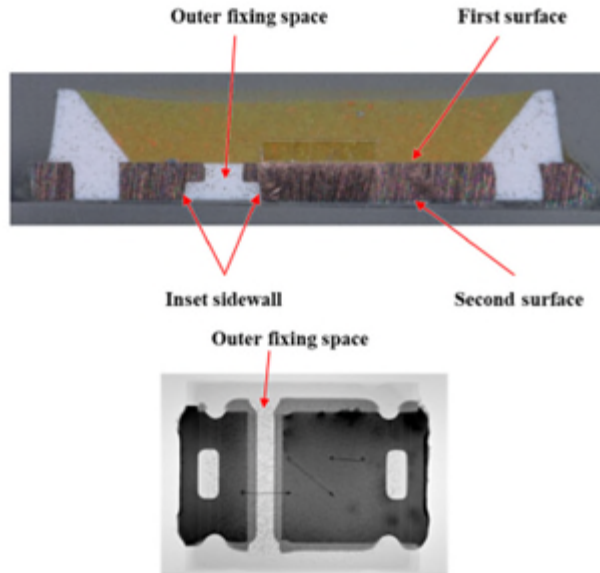
And importantly nowhere does TCP explain how its proposed construction is consistent with the express language of claim 1 requiring that “at least one of the sidewalls comprising an inset sidewall partially defining an outer fixing space.” (J. Ex. 5 (’821 Patent), claim 1 (emphasis added).) Instead, TCP asserts without analysis or support that the “inset sidewall” language should be replaced with the requirement of an “opening perforating and/or formed through a body in a vertical direction.” This substitution is both improper and incorrect.

Next, TCP asserts that Seoul’s construction of “outer fixing space” is improper because it “only ‘includes the area under the overhang of the inset sidewall.’” (§ III.F.2., *supra* at 55.) Indeed, TCP asserts that Seoul’s construction “excludes the space outside of the non-inset sidewall.” (*Id.*)

TCP's argument is confusing and unfounded. Seoul's construction does not exclude anything but instead reflects what is expressly recited in claim 1 – an “outer fixing space” is *a space that includes the area under the overhang of the inset sidewall*. Additional structures or features were neither expressly nor even impliedly precluded by this language.

Seoul further notes that courts often ask for an explanation for how a party's proposed construction relates to the infringement and/or validity issues, *see F45 Training Pty Ltd. v. Body Fit Training USA Inc.*, No. 20-1194-LPS, 2021 WL 2779130, at *9 (D. Del. July 2, 2021), which this Court did in the Scheduling Order (D.I. 33 at 6-7). Courts request these explanations to help ensure that constructions are adopted in the context of the parties' actual disputes rather than in the abstract. *See, e.g., Wilson Sporting Goods*, 442 F.3d at 1326-27 (“While a trial court should certainly not prejudge the ultimate infringement analysis by construing claims with an aim to include or exclude an accused product or process, knowledge of that product or process provides meaningful context for the first step of the infringement analysis, claim construction.”). This also helps ensure that district court judges expend the effort to address only “actual dispute[s] regarding the proper scope of these claims.” *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (emphasis added).

A review of Seoul's infringement contentions as exemplified by the images below confirms that the purported dispute here is illusory. The top image is a cross-section through an accused LED package and the bottom image is an x-ray vertically through the same package. Here, the outer fixing space includes (but is not limited to) the area under the overhangs (*i.e.*, the inset sidewalls). In no way did Seoul suggest the exclusion that TCP suggests.



The fundamental problem here, which is repeated throughout TCP’s brief, is that nowhere did TCP explain what it was trying to include or exclude based on its construction, providing instead abstract disputes. The Court should insist that the proper context be provided so that the Court and the parties are not merely trying to find a presentable paraphrase to substitute for the clear claim language used. As recognized in *Puma Biotechnology, Inc. v. Astrazeneca Pharms. LP*, No. 21-CV-1338-MFK, 2023 WL 2683559, at *8 (D. Del. Mar. 29, 2023), “merely rephrasing or paraphrasing the plain language of a claim by substituting synonyms does not represent genuine claim construction.” *Id.* (quoting *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 863 (Fed. Cir. 2004)); *see also ID Image Sensing LLC v. OmniVision Techs., Inc.*, No. CV 20-136-RGA, 2021 WL 5206262, at *3 (D. Del. Nov. 9, 2021) (same).

Finally, TCP asserts that Seoul’s construction of “‘inner fixing space’ omits any requirement that the ‘fixing space’ be located in a way that can be described as ‘inner.’” (§ III.F.2., *supra* at 56.) Seoul disagrees, as that aspect is unambiguously reflected in the proposal’s requirement that the “inner fixing space” is *an opening extending from the first surface to the second surface*. The first and second surfaces are expressly recited as the surfaces of the lead frame

that are connected by sidewalls, confirming that an opening having the recited characteristics will meet the “inner” aspect of claim 1. Thus, whereas Seoul’s construction tracks the actual claim language, TCP’s proposal improperly seeks to erase the distinction between the two types of fixing spaces recited in the claims. Although unnecessary, Seoul would accept the following alternative proposal to put this non-issue to rest - *an inner opening extending from the first surface to the second surface*.

4. TCP’s Sur-Reply Position

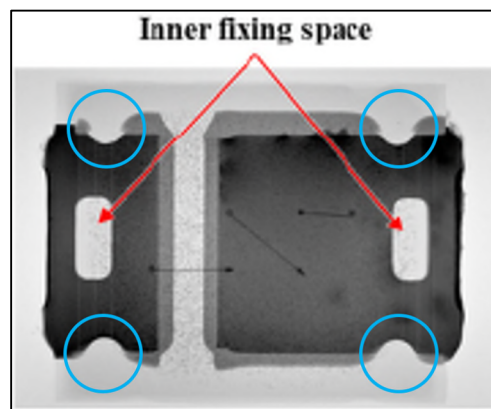
TCP’s construction of “fixing space” encompassing “two distinct forms of fixing spaces—inner and outer” is consistent with the intrinsic evidence and is not “ignoring” any description from the specification. *See supra* §III.F.3, 57; *supra* §III.F.2, 53–56. TCP’s construction of “fixing space” is consistent with the other language of the claims, i.e., TCP’s construction, when inserted, results in the claim reading: “...an inset sidewall partially defining an outer opening perforating and/or formed through a body in a vertical direction.”

Seoul wrongly assumes that only *infringement* issues can result in disputes that warrant claim construction. *See supra* §III.F.3, 58–59. The disputes “regarding the proper scope of” “fixing space” and other terms are “actual,” and not “abstract” or “illusory,” disputes that impact at least patent validity. *See O2 Micro*, 521 F.3d at 1360. The dispute over construction of “fixing space” is relevant to determining whether prior art invalidates the claims. The dispute here goes beyond “rephrasing,” “paraphrasing,” or “substituting synonyms” (*see supra* §III.F.3, 59)—instead the parties have substantial differences in their constructions that must be addressed by the Court.

Seoul clarifies that its construction of “outer fixing space” “does not exclude anything” (emphasis Seoul’s) and that “[a]dditional structures or features were ... [not] precluded by this

language.” *See supra* §III.F.3, 58. Seoul’s construction of “outer fixing space,” however, remains unhelpful in the context of the claim language. If Seoul’s construction is used in the claim language, the claim circularly recites “...an inset sidewall partially defining an outer space that includes the area under the overhang of the inset sidewall.”

Seoul’s construction of “inner fixing space” also is not as clear as Seoul contends, and what Seoul calls a “non-issue” does matter. *See supra* §III.F.3, 60. Requiring that “an opening extend[] from the first surface to the second surface” does not necessarily mean that the opening is located on the inner part of the lead frame. As shown below in the annotated image from Seoul’s infringement contentions, the features circled in blue appear to be “opening[s] extending from [a] first surface to [a] second surface” but located on the “outer” edge of the lead frames. Seoul’s original construction of “inner fixing space” would include these features and is, thus, overbroad. While TCP acknowledges that Seoul’s “alternative proposal” (*see supra* §III.F.3, 60) is closer to TCP’s construction of “fixing space,” TCP does not agree that this construction only applies to “inner fixing space.”



G. “fixing hole”
(U.S. Patent No. 9,147,821, Claim 5)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>inner fixing space</i>	“opening perforating and/or formed through a body in a vertical direction (<i>i.e.</i> , a direction normal to the surface of a light-emitting diode chip) and surrounded by the body”	Construction of this term may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Apparent Agreements: The parties appear to agree that the same construction applied to “inner fixing space” should also apply to “fixing hole.”

Disputes: The precise nature of the dispute is unclear.

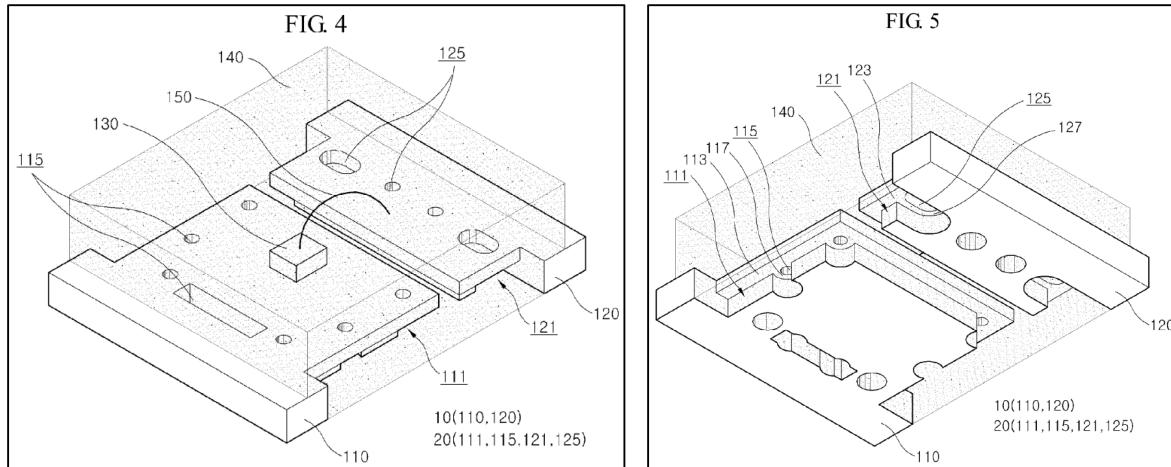
Claim 5 recites in relevant part “the inner fixing space comprises a fixing hole.” As discussed in Section D above, the phrase [term A] comprises [term B] means that [term A] must include at least [term B]. Applying that meaning to the above quoted claim language, the recited “inner fixing space” must include at least “a fixing hole.” The use of the qualifier “at least” is unnecessary, as claim language is presumptively open ended. *Crystal Semiconductor Corp.*, 246 F.3d at 1347. Therefore, defining a “fixing hole” in terms of the textually related concept “inner fixing space” (separately construed in Section F above), should be sufficient. Indeed, TCP provides the identical construction for both, confirming that the dispute is subsumed by the meaning of “inner fixing space.”

2. TCP’s Answering Position

Claim 5 of the ’821 Patent recites a light-emitting device “wherein the inner fixing space comprises a *fixing hole*.” J. Ex. 5, claim 5. TCP’s proposed construction of “fixing hole” is both consistent with the intrinsic record and construes the term such that both “inner fixing space” and

“fixing hole” have distinct meanings. Although Seoul appears to have overlooked the difference between TCP’s constructions for “fixing space” and “fixing hole” (*see supra* §III.G.1, 62), the proposed construction of “fixing hole” includes the phrase, “...and surrounded by the body,” which is not included in the proposed construction of “fixing space.” The remainder of TCP’s proposed construction for “fixing hole” is the same as the construction proposed for “fixing space.” Thus, the Court should adopt TCP’s construction of “fixing hole” for the same reasons discussed above with respect to “fixing space.” *See supra* §§ III.F.1 and III.F.3.

TCP’s construction recognizes that a “fixing **hole**” must be “surrounded by the body” in which it is placed. In contrast, a “fixing **space**” may not be entirely surrounded by the body. For example, the specification describes some “fixing spaces” as located on the edge of a lead frame and, thus, open beyond the bounds of the body. J. Ex. 5, 3:22–32, FIG. 1. Although the specification is not entirely consistent in its usage of “fixing space” and “fixing hole,” TCP proposes a construction for “fixing hole” that gives meaning to this term **and** related terms such as “fixing space,” “inner fixing space,” and “outer fixing space.” *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”). Moreover, the specification does consistently depict “fixing holes,” including “inner fixing holes 115 and 125,” as surrounded by the body of the lead frame as shown in FIGS. 4 and 5 below:



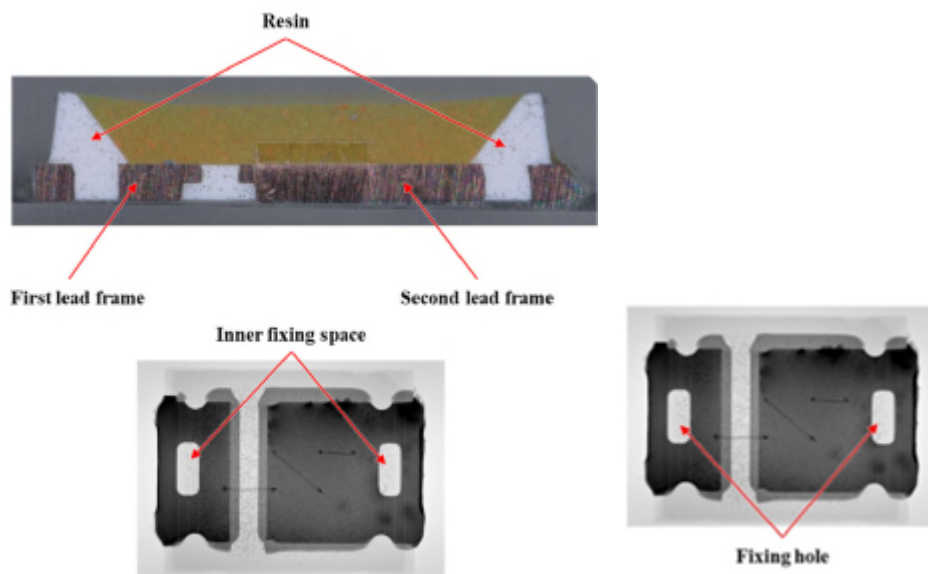
J. Ex. 5, 4:29–33, FIGS. 4–5.

Seoul’s proposed construction, however, ignores basic tenets of claim construction. Like it did with respect to the “groove” and “sub-groove(s)” terms, Seoul recites a rule but fails to properly apply that rule to the specific term. Seoul states that “the recited ‘inner fixing space’ must include at least ‘a fixing hole.’” *See supra* §III.G.1, 62. However, Seoul then reaches the unsupported position that “fixing hole” can be *equated* and *construed* simply as an “inner fixing space.” *Id.* Adopting such a construction would have the circular and non-sensical result that, when inserting the language of Seoul’s proposed construction back into the claim, claim 5 would recite “the inner fixing space comprises an inner fixing space.” This is wholly unhelpful. If Seoul’s proposed construction were to be adopted, claim 5’s recitation that “the inner fixing space comprises an inner fixing space” would be redundant and without meaning. *Merck*, 395 F.3d at 1372. Thus, the Court should reject Seoul’s construction and adopt TCP’s construction.

3. Seoul's Reply Position

TCP's analysis of "fixing hole" raises as many questions as it purports to answer. More specifically, TCP fails to explain how an "opening" that is "perforating and/or formed through a body" must be further narrowed to require that it be "surrounded by the body." Indeed, similar to the preceding claim recitation, TCP's proposal appears to be an attempt to manufacture a

distinction where none exists. As shown in the images below from Seoul's infringement contentions, each identified "inner fixing space," which comprises a "fixing hole" according to the express language of the claim, is a resin-filled opening that extends from the upper surface of a lead frame to the opposite bottom surface.



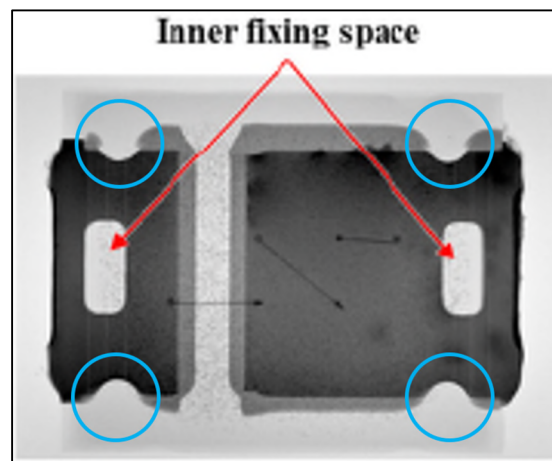
TCP's view that additional limitations must be imposed on the claim appears to be nothing more than wordsmithing rather than seeking to address a substantive dispute. And given TCP's silence regarding the relevance of this dispute to any issue of fact that must be resolved, the Court should refuse to engage in this mere academic exercise.

For this term TCP also reprises its argument that when a claim recites [term A] comprises [term B], it is improper as a matter of law to construe those terms consistently. TCP, however, cites no precedent supporting that view. As discussed above, what TCP seems to object to is the undisputed rule of interpretation in patent law that the word "comprising" means "includes at least." That fundamental premise is implicitly included in every use of the term "comprising," which encompasses the recited characteristics but does not preclude additional unrecited elements. *See HZNP Medicines*, 940 F.3d at 692. Indeed, form jury instructions include this axiom. *See, e.g.,*

N.D. Cal. Model Patent Jury Instructions at 13 (available at <https://cand.uscourts.gov/forms/jury-instructions/>). Stated differently, a construction that states *the inner fixing space includes at least a fixing hole* is not different in any material respect, but instead adds unnecessary verbiage already included within the jury instruction on the meaning of comprising. TCP should be required to explain how this unnecessary dispute relates to any live issue of fact that requires resolution. Absent such an explanation, this dispute is meaningless.

4. TCP's Sur-Reply Position

TCP proposes a construction for “fixing hole” so the term maintains a distinct meaning from “inner fixing space” while remaining consistent with the intrinsic record. *See supra* §III.G.2, 62–64; *supra* §III.G.3, 64–66. As discussed above, (*see supra* §III.G.2), without construing “fixing hole,” it is unclear whether the features circled in blue below, and similar prior art features, are “fixing holes,” “fixing spaces,” both, or neither.



Seoul ignores the “substantive dispute” here—characterizing it as “manufacture[d],” “nothing more than wordsmithing,” a “mere academic exercise,” “unnecessary,” and “meaningless” in the span of less than two pages. *See supra* §III.G.3, 65. But, this issue remains “live” because Seoul ignores the distinction between “inner fixing space” and “fixing hole.” *See supra* §III.G.3, 65; *supra* §III.G.2, 63–64. Seoul purports “to construe those terms consistently,”

but instead seeks to construe “inner fixing space” and “fixing hole” *identically and as equivalents*. See *supra* §III.G.3, 64–66. Neither Seoul’s cases nor Seoul’s cited jury instructions (see *supra* §III.G.3, 65–66) support its argument that terms connected by “comprising” may be equated through claim construction. While Seoul mischaracterizes the dispute (see *supra* §III.G.3, 65–66), Seoul’s construction also leads to the circular result of claim 5 reciting “the inner fixing space comprises an inner fixing space.” See *supra* §III.G.2, 63–64.

- H. (a) “a first undercut sidewall, a second undercut sidewall, and a third undercut sidewall that at least partially define a fixing space and interior portions of the first and second lead frames, the fixing space being formed by the undercut sidewalls of the first lead frame and the second lead frame”
 (b) “undercut sidewall”
 (c) “fixing space”
 (U.S. Patent No. 10,134,967, Claims 17 and 20)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
(a) <u>a first undercut . . . lead frame</u> [Agreed construction in §II., <i>supra</i>]		
(b) <u>undercut sidewall</u> <i>a sidewall having a structure consistent with material having been cut away from the underside so as to leave an overhanging portion in relief</i>	“sidewall(s) located inwardly on the underside of an upper overhanging portion of a body”	Construction of [these] term[s] may impact validity/ invalidity and/or infringement/ non-infringement, and may assist the jury.
(c) <u>fixing space</u> Plain and ordinary meaning, or alternatively: <i>a space that includes the area under the overhangs of the undercut sidewalls</i>	“opening perforating and/or formed through a body in a vertical direction (<i>i.e.</i> , a direction normal to the surface of a light-emitting diode chip)”	

1. Seoul’s Opening Position

Apparent Agreements: The parties agree that the term “sidewall” requires no construction. They also appear to agree regarding the substantive meaning of “undercut sidewall,” as it is unclear whether any meaningful daylight exists between the proposals.

Disputes: (1) whether to deviate from the express construction adopted during IPR2020-00410, (2) whether the recitation “a first undercut sidewall . . .” is indefinite; and (3) whether TCP’s construction for “fixing space” from the separate ’821 Patent must apply here.

The phrase “undercut sidewall” arrives before this Court after the Patent Trial and Appeal Board (“the Board”) adopted an express definition during an administrative trial. *Satco Prods., Inc. v. Seoul Semiconductor Co., Ltd.*, No. IPR2020-00410, 2021 WL 3123099, at *5-6 (P.T.A.B. July 21, 2021). As acknowledged by the Board, Seoul “agree[d] with our construction.” The Federal Circuit has held that “statements made by a patent owner during an IPR proceeding, whether before or after an institution decision, can be considered for claim construction and relied upon to support a finding of prosecution disclaimer.” *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1362 (Fed. Cir. 2017). The adopted construction from the earlier proceeding, therefore, should apply here. Indeed, the recitation “undercut sidewall” was submitted as part of a “substitute claim” pursuant to 35 U.S.C. § 316(d)(1) during the trial. The Board’s analysis, therefore, addresses the precise scope used when deciding whether to issue the newly drafted Claim 17. *Uniloc 2017 LLC v. Hulu, LLC*, 966 F.3d 1295, 1304 (Fed. Cir. 2020) (explaining that “[t]he IPR Statutes plainly and repeatedly require the PTAB to determine the ‘patentability’ of proposed substitute claims”). Indeed, the Board’s statement describing the meaning of the claim term “undercut sidewall” is akin to Reasons for Allowance during regular prosecution, which are often cited for purposes of claim construction. *See Pavo Sols.*, 35 F.4th at 1377.

To the extent that TCP wants to deviate from this clear history, it should at a minimum explain how its proposal is broader or narrower than the Board’s construction. If it does not, the Court should refuse to engage in this mere academic exercise.

As to TCP indefiniteness defense, as discussed above, Claim 17 was issued after a full trial

before the Board. Although TCP concedes that “undercut sidewall” and “fixing space” as used in the longer phrase are sufficiently definite by providing constructions for those terms, it maintains that the complete phrase is not. The precise nature of TCP’s defense, however, remains unclear. Of necessity, therefore, Seoul will address this issue on reply.

Finally, the dispute regarding “fixing space” largely reprises the dispute regarding “outer fixing space” in Section F above. Here, Seoul’s construction differs slightly to correspond to the above referenced record before the Board, which makes clear that the recitation of “fixing space” as used in the substitute claim is related to three recited undercut sidewalls. In contrast, TCP again suggests that the two-word phrase “fixing space” must be construed identically regardless of context.

2. TCP’s Answering Position

“fixing space”

The ’967 Patent is a continuation of and shares a specification with the ’821 Patent. As such, the Court should adopt TCP’s construction of “fixing space” in the ’967 Patent for the same reasons discussed above with respect to this term in the ’821 Patent. *See Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1334 (Fed. Cir. 2003) (noting that the same construed meaning should attach to the same claim term in related patents); *see supra* §III.F. TCP’s proposed construction is consistent with the intrinsic evidence. *See* J. Ex. 4, 1:26–31, 1:66–2:4, 3:25–27, 3:37–41, 4:39–49, 6:5–13. Seoul’s proposed construction that the fixing space *only* “includes the area under the overhangs of the undercut sidewall” is too narrow and contradicts the specification, as discussed above. *See supra* §III.F. Because TCP’s construction of “fixing space” is consistent with the intrinsic evidence, and Seoul’s construction is not, the Court should adopt TCP’s construction.

“undercut sidewall(s)”

The term “undercut sidewall(s)” does not appear in the specification. The only reference to “undercut” in the specification is a description of a “fixing space undercutting at least one of the first lead frame and second lead frame.” J. Ex. 4, Abstract, 2:12–13. This reference is unhelpful in determining how the term “undercut sidewall(s)” should be construed.

Nonetheless, the parties seem to partially agree on the proper construction of “undercut sidewall(s)” —both parties propose constructions that reference a “sidewall,” an “underside,” and an “overhanging portion.” Although Seoul feigns ignorance as to the “daylight” between the parties’ proposed constructions (*see supra* §III.H.1, 67–68), the important differences between the proposals are obvious in light of the prior IPR proceedings for the ’967 Patent (IPR2020-00410).

Seoul previously relied on the Board’s erroneous claim construction of “undercut sidewalls” to distinguish the “Lee” prior art reference for not including “a structure consistent with material having been cut away.” Seoul previously argued that “Lee does not teach a lead frame having three undercut sidewalls” because, in one embodiment in Lee, “there is no ‘cut away’ like a carving—there is just a larger sheet of metal glued on a smaller sheet of metal.” J. Ex. 14 at TCP-SEOUL-00009889–TCP-SEOUL-9891, TCP-SEOUL-9894–TCP-SEOUL-9897. Further, Seoul emphasized that “[s]tructure consistent with material having been cut away from the underside’ is not superfluous” but that an “undercut sidewall” “must at least be consistent with one that can be practically ‘cut away.’” J. Ex. 13 at TCP-SEOUL-00009656–TCP-SEOUL-9662, TCP-SEOUL-9691–TCP-SEOUL-9696. Thus, Seoul has consistently focused on the “cut away” language of its proposed construction to improperly exclude prior art. For at least this reason, TCP

cannot agree that Seoul's proposal is appropriate.¹³

Moreover, the claim language and the specification do not support the notion that material must be cut away from the sidewall to be considered an "undercut sidewall." For example, the claim language makes no mention of how the undercut sidewalls must be formed, let alone recites that these features must be formed through cutting away material. J. Ex. 4, substitute claims 17, 20. Similarly, the specification states that "stepped portions 113 and 123 may be formed on sidewalls of the outer fixing holes 111 and 121," but is silent regarding how these features should be formed. *Id.*, 3:48–63. Therefore, neither the claims nor the specification support this portion of Seoul's proposed construction.

Despite Seoul's arguments regarding prosecution disclaimer, claim amendment/substitution, and reasons for allowance (*see supra* §III.H.1, 68), the Court should not adopt Seoul's proposed construction. In particular, the cases cited by Seoul are inapposite as neither *Aylus*, *Uniloc*, nor *Pavo* support a patent owner, such as Seoul, making self-serving use of its prior statements to improperly narrow the scope of a claim. *See Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1362 (Fed. Cir. 2017) (holding patent owner's statements against the patent owner, not the patent challenger, when those statements were clear and unmistakable); *see Uniloc 2017 LLC v. Hulu, LLC*, 966 F.3d 1295, 1304 (Fed. Cir. 2020) (holding that the PTAB may consider patent eligibility challenges under §101 when reviewing substitute claims); *see Pavo Sols. LLC v. Kingston Tech. Co., Inc.*, 35 F.4th 1367, 1377 (Fed. Cir. 2022) (discussing the PTAB's description of an invention in the context of a request to judicially correct an obvious typographical error in a patent claim). Further, given the long and ambiguous history of this term throughout

¹³ If Seoul believes that the parties have "Apparent Agreement[]" on the "substantive meaning of 'undercut sidewalls'" and sees no "meaningful daylight between the proposals" (*see supra* §III.H.1, 67–68), then TCP welcomes Seoul's agreement to TCP's proposal.

prosecution of multiple related patents and the IPR proceedings, the Court should give the specification more weight than the prosecution history. *Phillips*, 415 F.3d at 1317 (holding that prosecution history “often lacks the clarity of the specification and thus is less useful for claim construction purposes”) (citations omitted). Thus, the Court should adopt TCP’s construction and reject Seoul’s, or any other construction that includes language similar to the phrase, “material having been cut away.”

3. Seoul’s Reply Position

8(a): TCP has accepted Seoul’s proposed construction, and therefore, this section is omitted.

8(b): As explained in Seoul’s opening brief, the complete term above was submitted for the first time to the Board of Patent Appeals and Interferences (“the Board”) during an *inter partes* review proceeding. (§ III.H.1., *supra* at 68.) Importantly, the Board provided the above-proposed construction of “undercut sidewall,” which Seoul expressly adopted. (*Id.*) This record indicates a prosecution disclaimer, which alters a term’s ordinary meaning. *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1362 (Fed. Cir. 2017); *see also Thorner*, 669 F.3d at 1365.

Rather than contend with this record, TCP complains that Seoul “relied on the Board’s erroneous claim construction of ‘undercut sidewalls’ to distinguish the ‘Lee’ prior art.” (§ III.H.2., *supra* at 70.) TCP’s disagreement with the Board’s analysis and conclusions is not within the purview of this Court’s claim-construction analysis. Stated differently, if TCP believes that the Board erred and instead the asserted claims should be invalidated by Lee, it is free to present its theory at the proper stage of this litigation. At the claim-construction stage, however, the relevant question is whether a meaning different from the ordinary was clearly provided in the specification or adopted during prosecution. *Thorner*, 669 F.3d at 1365. The Court is free to consider how the

adopted construction will affect later determinations of infringement and validity, *see Wilson Sporting Goods*, 442 F.3d at 1326-27, but those considerations cannot support adopting a different construction from that indicated by the proper tools of claim construction as enumerated by *Philips* and its progeny. *See, generally, Phillips*, 415 F.3d at 1314.

Finally, TCP presents the *sui generis* argument that relying on the prosecution history for purposes of claim construction is available only to accused infringers. (§ III.H.2., *supra* at 71.) Indeed, TCP purports to cite page 1362 of the Federal Circuit’s *Aylus Networks* decision as creating a rule that prosecution history may only be used “against the patent owner.” (*Id.* (citing *Aylus Networks*, 856 F.3d at 1362).) That decision says nothing of the sort. *See, generally, Aylus Networks*, 856 F.3d at 1353. In contrast, in the Federal Circuit’s recent decision in *Eye Therapies, LLC v. Slayback Pharma., LLC*, 141 F.4th 1264 (Fed. Cir. 2025), the Court relied upon the patent owner on its own “atypical meaning of ‘consisting essentially of’” as explained during prosecution when adopting the patent owner’s proposed construction. *Id.* at 1269. TCP’s assertion that precedent precludes a patent owner from relying on the prosecution history is false. *Id.* The Court should not countenance the manufacture of new rules of claim construction without support in existing caselaw.

8(c): TCP asserts that whatever construction is adopted for the term “fixing space” in the ’967 Patent should apply here. As explained in Seoul’s opening brief, the flaw in TCP’s argument is its failure to acknowledge that the two-word phrase is recited differently in the fuller context of the claims:

'821 Patent, Claim 1	'967 Patent, Claim 17
“at least one of the sidewalls comprising an inset sidewall partially defining an outer fixing space”	“a first undercut sidewall, a second undercut sidewall, and a third undercut sidewall that at least partially define a fixing space and interior portions of the first and second lead frames, the fixing space being formed by the

	undercut sidewalls of the first lead frame and the second lead frame”
--	---

More specifically, the “fixing space” recited in the ’967 Patent is defined by three undercut sidewalls, whereas the “outer fixing space” in the ’821 Patent is defined by “at least one of the sidewalls.” The view that these distinct recitations must be accorded the identical meaning lacks support in law or logic.:

4. TCP’s Sur-Reply Position

“fixing space”

This term should be construed consistently for the ’967 and ’821 Patents regardless of how it appears in the claims. Seoul cites no support for the converse proposition. *See supra* §III.H.3, 73–74; *supra* §III.H.2, 69; *see supra* §III.F.

“undercut sidewall(s)”

The dispute here is whether the phrase “having a structure consistent with material *having been cut away from*” as now suggested by Seoul should be included in the construction of “undercut sidewall(s).” Rather than focus on how they may be formed, TCP’s construction includes the location and position of the “undercut sidewalls” in relation to the also-recited lead frames and sidewalls. In other matters, Seoul agreed to constructions of this term and related terms that did not include the “cut away” language. J. Ex. 31, SEOUL_012583 (agreeing to construe this same term as “a space formed where the bottom of a sidewall is indented relative to the top”); *see also id.*, SEOUL_012582 (agreeing to construe “undercutting [the first surfaces]” as “being indented relative to the first surface”). The Court should adopt TCP’s construction at least because Seoul previously agreed to similar constructions.

While TCP never asserted “that precedent precludes a patent owner from relying on the prosecution history” (*see supra* §III.H.3, 73), the *full* prosecution history, not only parts found

favorable by Seoul, should be considered. The applicant added the term “undercut sidewalls” to the claims of the ’967 Patent to overcome an indefiniteness rejection. J. Ex. 10, TCP-SEOUL-00005957–5960, TCP-SEOUL-00005962–5964. The applicant described “undercut sidewalls” as “where the face of each sidewall has a clear *undercut/step/ledge*.” *Id.*, TCP-SEOUL-00005962. Neither the applicant’s description of “undercut sidewalls,” reference to the figures, nor arguments distinguishing prior art has anything to do with how the “undercut,” “step,” or “ledge” is formed. *Id.*, TCP-SEOUL-00005962–5964. Seoul’s prosecution disclaimer argument should be rejected.

Finally, Seoul’s statement that TCP “is free to present” an invalidity theory based on Lee is disingenuous. *See supra* §III.H.3, 72. Seoul previously relied on the “cut away” language to exclude prior art, including Lee. *See supra* §III.H.2, 70–71; *see Wilson*, 442 F.3d at 1326–27. If Seoul’s construction is adopted here, Seoul will likely do the same again. Thus, Seoul, not TCP, is seeking to gain an advantage by proposing a construction that will infect all “stage[s] of this litigation” with the same error made in the IPR proceedings. *See supra* §III.H.3, 72; *supra* §III.H.2, 70–71.

I. “fixing hole”
(U.S. Patent No. 10,134,967, Claims 17 and 20)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>a hole located in the interior portion of a lead frame</i>	“opening perforating and/or formed through a body in a vertical direction (<i>i.e.</i> , a direction normal to the surface of a light-emitting diode chip) and surrounded by the body”	Construction of this term may impact validity/ invalidity and/or infringement/ non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Apparent Agreements: None.

Disputes: The sole dispute appears to be whether TCP’s proposed construction for “fixing

hole” for the ’821 Patent should apply here. The distinct claim language introducing the recitation “fixing hole” in the different patents is provided below:

’821 Patent, Claim 5	’967 Patent, Claim 17
“the inner fixing space comprises a fixing hole”	“the first and second lead frames each comprising . . . a fixing hole . . . each fixing hole is located in the interior portions of each of the first and second lead frames”

Because Claim 5 of the ’821 Patent expressly defined the term “fixing hole” based on the separately recited “inner fixing space,” Seoul’s construction in Section G adopts that meaning. Here, Claim 17 recites the “fixing hole” differently, stating that it each must be located in an interior portion of a lead frame. The Court, therefore, should reject TCP’s request to construe the term “fixing hole” in the abstract rather than in the context in which it is recited. The proper construction requires *a hole located in the interior portion of a lead frame*.

2. TCP’s Answering Position

At least because the ’967 Patent is a continuation of and shares a specification with the ’821 Patent, the Court should adopt TCP’s construction of “fixing hole” in the ’967 Patent for the same reasons discussed above with respect this term in the ’821 Patent. *See Omega Eng’g*, 334 F.3d at 1334 (noting that the same construed meaning should attach to the same claim term in related patents); *see supra* §III.G.

Although Seoul insists that the term should be construed “in the context in which it is recited” (*see supra* §III.I.1, 75–76), Seoul proposes a construction lacking any such context. First, much of Seoul’s proposed construction—“located in the interior portion of a lead frame”—is recited in other limitations of the claims, making it unnecessary for the Court to include this language in construing “fixing hole.” Specifically, claim 17 recites “each fixing hole *is located in*

the interior portions of each of first and second lead frames.” J. Ex. 4, claim 17. Second, without this unnecessary language, Seoul’s proposed construction of “fixing hole” is simply “a hole.” Thus, the Court should reject Seoul’s unhelpful construction and, instead, adopt TCP’s construction of “fixing hole”.

3. Seoul’s Reply Position

As explained in Seoul’s opening brief, the term “fixing hole” is recited differently in claims 5 and 17 of the ’821 Patent and ’967 Patent respectively. (§ III.I.1., *supra* at 75-76.) Here again TCP claims that the differences are irrelevant because it only requested construction of the two-word phrase “fixing hole” in isolation. (§ III.I.2., *supra* at 76.) This position lacks merit for the reasons discussed above.

In addition, TCP criticizes Seoul’s construction because portions of that construction are “recited in other limitations of the claims.” (*Id.*) This argument ignores the reality that claim 17 expressly lays out the requirements to be a “fixing hole.” In effect, TCP demands that something more than what is expressly recited in the claims must be added to further narrow the recited characteristics to present a proper claim construction. That position finds no support in law or reason. Indeed, as discussed above, the Federal Circuit has acknowledged that there is nothing improper in construing a claim term in view of later recitations of the same claim. *Pause Tech.*, 419 F.3d at 1331. TCP’s critique, therefore, is misdirected.

4. TCP’s Sur-Reply Position

This term should be construed consistently for the ’967 and ’821 Patents regardless of how it appears in the claims. Seoul cites no support for the converse proposition. *See supra* §III.I.3, 77; *supra* §III.I.2, 76–77; *supra* §III.G.

J. “each fixing hole . . . includes an undercut sidewall that envelopes inner bounds of the fixing hole”
(U.S. Patent No. 10,134,967, Claims 17 and 20)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
<i>the shape of the interior volume within each fixing hole includes an undercut</i>		

TCP has accepted Seoul’s proposed construction, and therefore, this section is omitted.

K. “a plurality of thick film layers”
“a plurality of thin film layers”
(U.S. Patent No. 8,604,496, Claims 1 and 11)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
<u>a plurality of thick film layers</u> Plain and ordinary meaning, or alternatively: <i>semiconductor layers each having a thickness greater than the thin film layers</i>	“a plurality of layers having a thickness between 1.5 nm and 3 nm”	Construction of this term may impact validity/ invalidity and/or infringement/ non-infringement, and may assist the jury.
<u>a plurality of thin film layers</u> Plain and ordinary meaning, or alternatively: <i>semiconductor layers each having thickness not more than a thickness of the thick film layers</i>	“a plurality of layers having a thickness less than 1.5 nm”	

1. Seoul’s Opening Position

Apparent Agreements: None.

Disputes: The disputes here are similar to Section B above – TCP demands that the claims be constrained to strict numerical boundaries. There is one material distinction, for the terms in Section B TCP also asserts indefiniteness. Here, however, TCP concedes that the terms are sufficiently definite and therefore must establish either disclaimer or lexicography to impose these

requirements on the claims. *Thorner*, 669 F.3d at 1365.

Starting first with the claim language, Claim 1 expressly defines the relative thicknesses of the recited layers: “a thickness of the thin film layers being not more than a thickness of the thick film layers.” The numerical limits proposed by TCP do not appear, showing that the claim terms are sufficiently defined by the claim itself without strict numerical boundaries. Indeed, dependent Claim 10 recites similar boundaries, supporting the conclusion that they should not be imported into Claim 1. *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1379-80 (Fed. Cir. 2006) (“In the most specific sense, “claim differentiation” refers to the presumption that an independent claim should not be construed as requiring a limitation added by a dependent claim.”) (citing cases).

In addition, the specification confirms that the disclosed boundaries are exemplary rather than definitional:

More specifically, the thickness of the thick film layer SA is, for example, in a range of not less than 1.0 nm and not more than 3 nm. The thickness of the thin film layer SB is thinner than that of the thick film layer SA and thinner than 1.5 nm. Herewith, it is possible for the multilayer stacked body SL to have the superlattice structure.

(J. Ex. 8 (’496 Patent) at 4:3-9 (emphasis added).) Indeed, those layers were first introduced within the Detailed Description using even broader language:

The multilayer stacked body includes a plurality of thick film layers and a plurality of thin film layers alternately stacked in the direction. A thickness of the thin film layers are not more than a thickness of the thick film layers.

(*Id.* at 1:56-60.) Lexicography, therefore, does not apply.

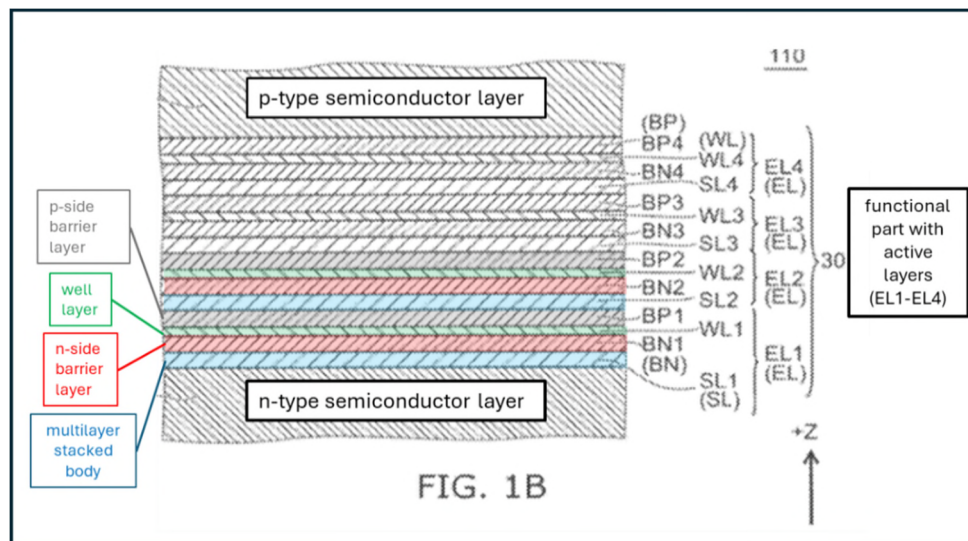
To date TCP has not cited any portion of the file history to suggest a disclaimer. (D.I. 105-1 at 28-29.) That basis for narrowing beyond ordinary meaning therefore fails too. The Court, therefore, should reject these flawed constructions and conclude either that no construction is required or construe “plurality of thick film layers” to mean *semiconductor layers each having a*

thickness greater than the thin film layers and “plurality of thin film layers” to mean *semiconductor layers each having thick-ness not more than a thickness of the thick film layers*.

2. TCP’s Answering Position

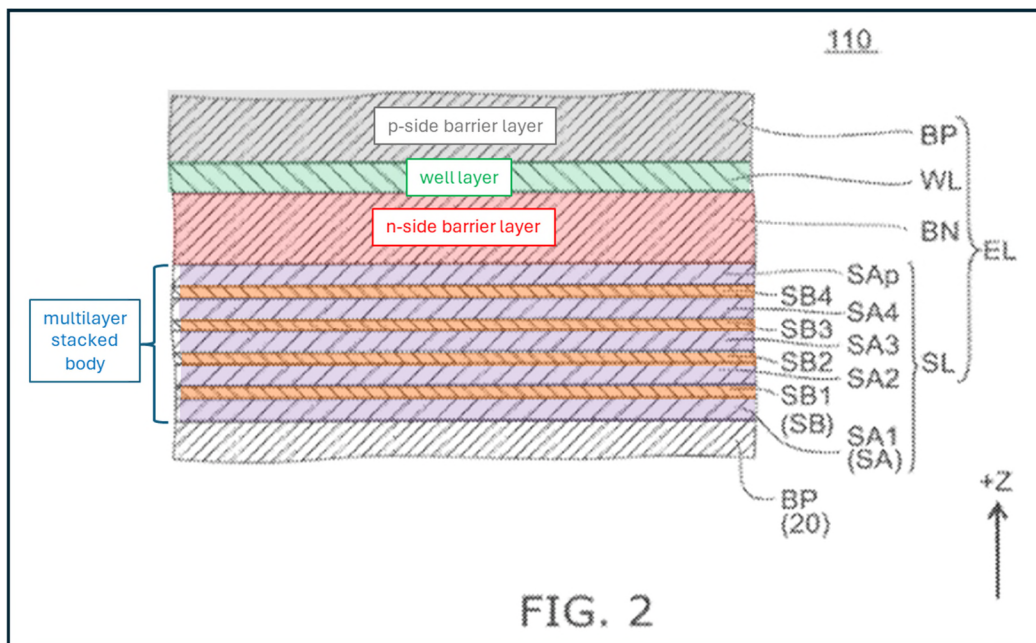
The dispute related to these claim terms is whether the thickness of the thick and thin film layers is entirely open ended. Seoul’s argument that there is no boundary on these terms belies (1) the express disclosure in the specification and (2) arguments made during prosecution, both of which are sufficient to overcome the presumption of claim differentiation.

Claim 1 recites a device with an n-type semiconductor layer, a p-type semiconductor layer, and “a functional part” in between. As shown in FIG. 1B below, claim 1 further recites that the functional part includes “a plurality of active layers” that each include a multilayer stacked body, an n-side barrier layer, a well layer, and a p-side barrier layer.



J. Ex. 8, 3:1–9, FIGS. 1A and 1B (annotated with color corresponding to paragraph text for ease of identification).

As shown in FIG. 2 below, the multilayer stacked body then includes “a plurality of thick film layers and a plurality of thin film layers” where “a thickness of the thin film layers being not more than a thickness of the thick film layers”:



Id., 3:37–40, FIG. 2; J. Ex. 26, ¶¶70–73 (annotated with color corresponding to paragraph text for ease of identification).

The '496 Patent states that the thickness of the thick and thin film layers is critical in several ways. First, the applicants defined the thickness for both the thick and thin film layers:

The thickness of the thick film layer SA is set to **3 nanometers (nm) or less**. More specifically, the thickness of the thick film layer SA is, for example, in **a range of not less than 1.0 nm and not more than 3 nm**. The thickness of the thin film layer SB is thinner than that of the thick film layer SA and **thinner than 1.5 nm**. Herewith, it is possible for the multilayer stacked body SL to have the superlattice structure.

J. Ex. 8, 4:3–9; J. Ex. 26, ¶74.

Second, the applicants explained the importance of having both the multilayer stacked body SL (superlattice structure) and separate well layers WL that form “a multiple quantum well (MQW) structure.” J. Ex. 8, 3:29–33; *see, e.g., id.*, 4:25–30 (this configuration provides “an optical semiconductor device of high efficiency”); 4:61–67 (“high efficiency and high luminance can be obtained”); 10:9–18 (“high characteristics can be realized”); FIGS. 1B, 2; J. Ex. 26, ¶75. For the MQW structure to operate effectively, separation must be maintained between the well

layers WL and the multilayer stacked body SL by controlling the thickness of the intervening n-side barrier layer BN and p-side barrier layer BP to be thicker than the thick film layer SA—thicker than 3 nm:

In the embodiment, the thickness of the thick film layer SA is thinner than that of the n-side barrier layer BN and that of the p-side barrier layer BP. Specifically, the thickness of the n-side barrier layer BN and the thickness of the p-side barrier layer BP are thicker than 3 nm.

Herewith, in each of the well layers WL, a desirable effect of carrier confinement can be achieved by the n-side barrier layer BN and the p-side barrier layer BP. As a result, further improved light emission efficiency can be obtained. Namely, an optical semiconductor device of higher efficiency and higher luminance can be obtained.

J. Ex. 8, 5:1–12; *see also id.*, 12:4–15 (“When the thickness of [the n-side barrier layer BN and the p-side barrier layer BP] is 3 nm or less, the well layer WL and the adjoining multilayer stacked body SL would function as a coupled quantum well. ... On the other hand, by setting the thickness of these layers thicker than 3 nm, further light emission efficiency can be obtained.”); 10:9–18; 11:14–25; 11:63–12:3; J. Ex. 26, ¶76. Should the thickness of the barrier layers be less than the thick film layer SA, there would be no separation between the well layer WL and the multilayer stacked body SL. And, if the thickness of the thick film layers SA is greater or equal to that of the barrier layers, the thick film layers start functioning as barrier layers, which results in the superlattice structure not functioning properly. J. Ex. 26, ¶77. As a result, different properties would be induced in the device, i.e., the LED would not work as described in the specification. *Id.*

Further, if there is no limit on the size of the thick and thin film layers, claim 1 would read on a basic MQW structure that consists of only wells and barriers. J. Ex. 26, ¶78. While MQWs and superlattices are structurally similar, their layers are not of the same thickness, which fundamentally changes the effect that they have on electrons *Id.* The barrier layers surrounding quantum wells in a MQW structure must be thick enough to achieve “a desirable effect of carrier

confinement” by limiting the ability of electrons to pass through the barrier layers and out of the well. *See* J. Ex. 8, 5:3–11, 12:4–15; J. Ex. 26, ¶78. If the barrier layers are too small (*e.g.*, “3 nm or less”), “the well layer WL and the adjoining multilayer stacked body SL would function as a coupled quantum well, which “causes unintended changes in wavelength” and lowers the “internal quantum efficiency” and “light emission efficiency.” J. Ex. 8, 12:4–15; J. Ex. 26, ¶78. On the other hand, a superlattice is designed to encourage charge carrier tunneling through each thick film layer, which improves LED properties. J. Ex. 26, ¶78.

During prosecution, the applicants distinguished claim 1 over U.S. Application Publication No. 2009/0072262 to Iza (“Iza”) which taught an active layer with multiple well layers that were sandwiched by barrier layers. J. Ex. 27, TCP-SEOUL-00004680–TCP-SEOUL-00004681. The applicants argued that “Iza describes an active layer (112) having a multiple quantum well structure” and not that “at least two of the active layers include a multilayer stacked body and a single quantum well structure.” *Id.*, TCP-SEOUL-00004716. The applicants also distinguished claim 1 over U.S. Application Publication No. 2003/0151044 to Tadamoto (“Tadamoto”) by arguing that “Tadamoto describes a multiple quantum well structure to emit different wavelengths of emitting light without a multilayer stacked body.” *Id.*, TCP-SEOUL-00004717. A POSITA would understand the applicants’ arguments distinguishing references that taught multiple quantum wells, sandwiched by barrier layers, are different from thin film layers, sandwiched by thick film layers. J. Ex. 26, ¶¶81–82.

Accordingly, TCP’s proposed constructions for these terms should be adopted because they are consistent with the intrinsic record and put the only possible practical bounds on the thickness of these layers.

3. Seoul's Reply Position

The flaws in TCP's analysis for this term largely repeat flaws addressed throughout this submission. Most tellingly, rather than starting with the language of the relevant terms, TCP's brief jumps directly to discussing the patent's figures and passages from the "Detailed Description." (§ III.K.2., *supra* at 80-82) As explained for example in *Thorner*:

The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history. . . . There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.

669 F.3d at 1365 (emphasis added). TCP does not assert that its strictly-delimited construction is the ordinary and customary meaning. (§ III.K.2., *supra* at 80-83.) Nor does TCP justify its construction based on lexicography or disclaimer. (*Id.*) Instead, TCP vaguely asserts that "the thickness of the thick and thin films layers is critical in several ways." (*Id.* at 81.) To be sure patents disclose many features that may arbitrarily be described as important, but that alone is not a justification to import portions of the written description to overwrite the claims as drafted and issued by the Patent Office. *See, e.g., Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1331 (Fed. Cir. 2004) ("[P]atentees [are] not required to include within each of their claims all of [the] advantages or features described as significant or important in the written description."). TCP's entire analysis, therefore, should be summarily rejected.

TCP next justifies narrowing the claims based on its assertion that "the applicants explained the importance of having both the multilayer stack body SL (superlattice structure) and separate well layers WL." (§ III.K.2., *supra* at 81.) Here again, whether important or not, that cannot justify violating a cardinal sin of patent law by imposing unrecited details in place of the ordinary and customary meaning. *Phillips*, 415 F.3d at 1320, *Thorner*, 669 F.3d at 1366-67 ("We do not read

limitations from the specification into claims.”). Indeed, even if TCP’s assertion that setting the thicknesses would provide improved characteristics (*see, e.g.,* § III.K.2., *supra* at 82 (referencing obtaining “further light emission efficiency”)), that is not a proper basis to require all such potential improvements to be included in every single claim. Instead, the type of exclusion TCP suggests requires “a strong case of disclaimer of a particular feature from the scope of a claim because the specification made clear that the invention did not include that feature.” *Bayer Healthcare LLC v. Baxalta Inc.*, 989 F.3d 964, 975 (Fed. Cir. 2021); *see also id.* at 974 (likening the standard to “disparagement” of the alternative). TCP neither addressed nor remotely met this high standard.

Moreover, TCP’s narrow interpretation of the specification of the ’496 Patent is inconsistent with its actual contents. For example, the ’496 Patent explains that “[t]he multilayer stacked body SL may have, for example, a superlattice structure.” (J. Ex. 8 (’496 Patent) at 4:1-2 (emphasis added).) TCP’s assertion that the inventors intended to limit their invention to the precise details required by an example disclosure of the unrecited term “superlattice” as interpreted by Dr. Krames cannot be reconciled with the patent’s broad disclosure. (Feezell Decl. ¶¶45-51.)

Moreover, Dr. Krames conceded that the layer thicknesses he chose are specific to the gallium-nitride material system. (J. Ex. 25 (Krames Depo.) at 1011:17-112:25.) Thus, his proposed construction implicitly limits the claims to that unrecited characteristic. (*Id.* at 112:21-114:5.) Claim 1, however, is not limited to that single material system. (*Id.* at 112:11-13.) Indeed, dependent claim 6 narrows the claim to require gallium nitride, supporting the presumption that independent claim 1 is not so limited. *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1380 (Fed. Cir. 2006). When asked about this inconsistency, Dr. Krames responded “in the spirit of construction that’s helpful for the case, I based my opinion on gallium nitride-based devices.” (J. Ex. 25 (Krames Depo.) at 115:3-12.) That is not a proper justification for rewriting

the claims.

TCP's failure to address the expressly recited thickness requirements in claim 10 of the '496 Patent should also merit rejection of its position. That claim expressly recites "a thickness of the thick film layers is not less than 1.0 nanometer and not more than 3 nanometers, and a thickness of the thin film layers is less than 1.5 nanometers." (J. Ex. 8 ('496 Patent), Claim 10.) Seoul's opening brief addressed the factual and legal repercussions of those requirements in a dependent claim (*see* § III.K.1, *supra* at 79), which TCP tellingly ignored (*see* § III.K.2., *supra* at 80-83).

Finally, TCP and Dr. Krames assert that Seoul distinguished certain prior art references during initial prosecution based on descriptions of "multi quantum well structures." (§ III.K.2., *supra* at 82-83.) The problem with that argument, however, is that nowhere did they address the specific limits they are seeking to impose on the claims, *i.e.*, "layers having a thickness between 1.5 nm and 3 nm" and "a plurality of layers having a thickness less than 1.5 nm." When asked how the prosecution history supported that exclusion, Dr. Krames conceded that those requirements were "from the spec." (J. Ex. 25 (Krames Depo.) at 123:2-6.) And in the following colloquy, Dr. Krames essentially disclaimed his opinion that the claims provide the numerical limits in the proposal:

Q. Dr. Krames you're trying to argue that specific numerical bounds must be imposed onto claims correct?

A. No.

MR. DYER: Objection. Form.

Q. No? That's not your opinion?

A. I'm suggesting, yeah, as a matter of claim construction to simplify things for everyone, I'm proposing numerical limits that are within the scope of the invention and the applicant's own teaching. That does not mean that I'm, you know, anchoring those to limit claims.

(*Id.* at 130:23-131:12.) The specific numerical limits, therefore, should not be imported into the claims.

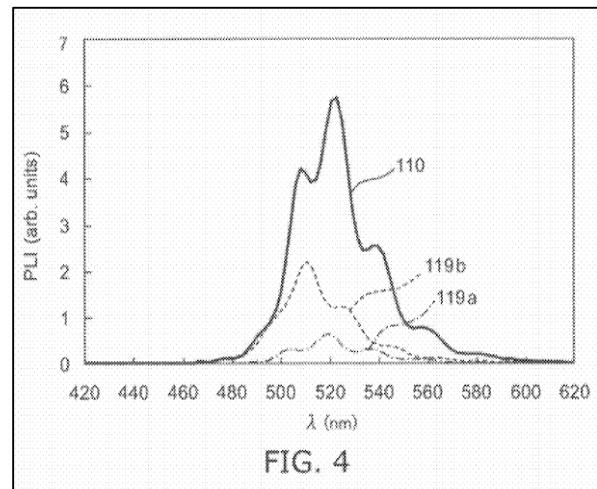
4. TCP's Sur-Reply Position

Seoul's reliance on *Thorner* is misplaced. *See supra* §III.K.3, 84. The Federal Circuit subsequently criticized *Thorner* on the point quoted by Seoul, holding that “[o]ur case law does not require explicit redefinition or disavowal” and expressly rejected the ***exact argument*** that Seoul makes here. *Trs. of Columbia Univ. in City of N.Y. v. Symantec Corp.*, 811 F.3d 1359, 1363–64 (Fed. Cir. 2016) (“Thus, we reject Columbia’s argument that the presumption of plain and ordinary meaning ‘can be overcome in only two circumstances: [when] the patentee has expressly defined a term or has expressly disavowed the full scope of the claim in the specification and the prosecution history.’”). The Federal Circuit further explained: “*Phillips* makes clear that ‘[t]he claims ... do not stand alone. Rather they are part of a fully integrated written instrument, consisting principally of a specification that concludes with the claims.’ The only meaning that matters in claim construction is the meaning in the context of the patent.” *Id.* at 1363. Thus, far from a “cardinal sin,” it is appropriate, and indeed required, for the Court to consider the specification when construing claims.

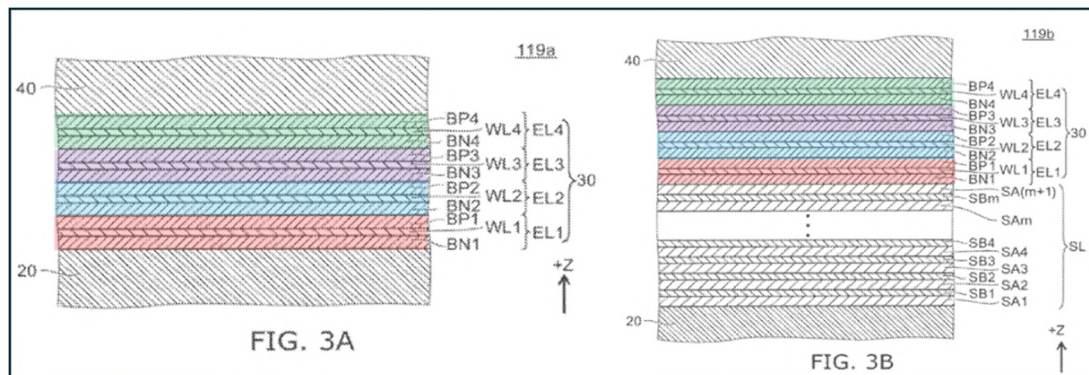
Seoul argues that the specification includes a “broad disclosure” ***but fails to point to any such disclosure related to these terms.*** *See supra* §III.K.3, 85. The applicants **repeatedly confirmed** the critical nature of the thickness of the thick and thin film layers in the “multilayer stacked body,” which is located below a well/barrier layer combination.¹⁴ *See supra* §III.K.2, 80–

¹⁴ In LEDs, barrier layers sandwiching a well layer (or quantum well) serves to help contain electrons in the quantum well allowing for improved light efficiency. *See* J. Ex. 20 at 11 (describing “double heterostructure” LEDs as highly efficient”), J. Ex. 21 at 620; J. Ex. 19 at 75.

83. FIG. 4 illustrates a purported improvement from including the “multilayer stacked body” where line 110 shows results from an LED constructed as described in claim 1. J. Ex. 8, 7:45–8:22. Line 119a results from an LED that has a standard MQW (see FIG. 3A below with multiple sets of well/barrier layer combinations) but does not include a multilayer stacked body. Line 119b results from an LED that has one large



multilayer stacked body placed below a standard MQW shown in FIG. 3B below. As shown in FIG. 4, the structure recited in claim 1 is described as an improvement over other structures.



Leading to the crux of this dispute: having thick and thin film layers of unbounded depths eliminates what the inventors identify as the critical “multilayer stacked body” because unbounded thick and thin film layers result in a standard MQW, i.e., thin film layers become well layers (quantum wells) and thick film layers become barrier layers. The applicants specifically distinguished prior art based on the claimed “multilayer stacked body” being different from standard MQWs. *See supra* §III.K.2, 83. Dr. Feezell confirmed that standard MQWs existed back in 1999. J. Ex. 30, 216:11–18. Including the specification’s thickness limitations safeguards that an LED with a standard MQW is not accused of infringing—which is, in fact, what Seoul has done

here.

Regarding claim 10, the specification discloses:

The thickness of the thick film layer SA is set to 3 nanometers (nm) or less. More specifically, the thickness of the thick film layer SA is, for example, in a range of not less than 1.0 nm and not more than 3 nm. The thickness of the thin film layer SB is thinner than that of the thick film layer SA and thinner than 1.5 nm. Herewith, it is possible for the multilayer stacked body SL to have the superlattice structure.

J. Ex. 8, 4:3–9. The range of thickness for the thick film layer in claim 10 is recited in the “for example” sentence (orange). To reflect what the applicants taught (in yellow) and maintain the distinction between claim 1 and 10, TCP proposes that the construction of “a plurality of thick film layers” could be amended to the definitional statement in the specification: “a plurality of layers having a thickness less than 3 nm.”

L. “well layer”

(U.S. Patent No. 8,604,496, Claims 1, 4, 9, 13, and 18)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>a layer of semiconductor material having a lower bandgap than its n-side barrier layer and p-side barrier layer</i>	quantum well <u>Original proposal:</u> Indefinite	Construction of this term may impact validity/invalidity and/or infringement /non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Seoul’s opening brief addressed an invalidity defense that is no longer at issue. That analysis, therefore, is omitted from this joint submission.

2. TCP’s Answering Position

In view of Seoul’s arguments clarifying its construction, TCP amends its proposed

construction for a “well layer” to a “quantum well.” The specification and Seoul’s arguments support TCP’s proposal.

The specification describes that “the functional part 30 has a multiple quantum well (MQW) structure” when “a plurality of well layers WL is provided.” J. Ex. 8, 3:29–33. Additionally, a POSITA would understand that each of the descriptions and citations that Seoul provides describe a “quantum well” including:

- “The technical concept of a well layer is based on confining electrons and holes (called charge carriers) to two degrees of freedom (i.e., they can move laterally but are largely trapped between the bounding barrier layers). (’496 Patent at 5:6–11.)”;
- “The trapped electrons can then combine with the trapped holes in a process called recombination, resulting in the emission of light. (*Id.* at 5:26–29.)”;
- “The mechanism that creates the trapping effect is sandwiching a relatively lower bandgap material between two relatively higher bandgap barrier layers. This mechanism works because the bandgap is related to the ease with which the charge carriers can move through a material.”;
- “The specification explains that the exemplary well layer can be made of indium gallium nitride (InGaN) sandwiched between higher bandgap gallium nitride (GaN) layers. (*Id.* at 5:19–25).”; and
- “Indeed, the specification provides example concentration ranges (*id.* at 5:30–36) layer thickness (*id.* at 7:5–8) and growth conditions (*id.* at 9:29–35; 10:25–30).”

J. Ex. 26, ¶86. Seoul’s extrinsic evidence also describes what a POSITA would correlate with a “quantum well.” J. Ex. 19 at 68–75 (describing the operation and characteristics of “quantum wells (QWs)”; J. Ex. 20 at 1–12 (discussing improving quantum efficiency using quantum wells); and J. Ex. 21 at 620 (defining a “quantum well”); J. Ex. 26, ¶87.

Thus, a POSITA would understand the term “well layer” should be construed as a “quantum well.” J. Ex. 26, ¶88. Seoul’s proposed construction describes only one aspect of a “quantum well” and thus, Seoul’s proposal could encompass other structures that would not be understood by a POSITA to be what the specification describes as the “well layer WL.” J. Ex. 26,

¶89.

3. Seoul's Reply Position

Although TCP originally asserted that the term “well layer” was indefinite, it now replaces that simple two-word phrase with the similar phrase “quantum well.” While Seoul professes no specific allegiance to its original proposal, Seoul can see no reason that the Court would need to instruct the jury that a “well layer” as recited in the '496 Patent must be interpreted as a “quantum well.” Doing so could cause confusion as to the difference, if any, implied by the instruction. But if the Court determines that a construction is required, “quantum well” would be acceptable.

4. TCP's Sur-Reply Position

Seoul does not dispute that a POSITA would understand this term as a “quantum well” and thus this construction should be adopted.

M. “the molding part is made of materials including at least one of silicone, epoxy, polymethylmethacrylate (PMMA), polyethylene (PE) and polystyrene (PS)”
(U.S. Patent No. 10,510,933, Claim 15)

Plaintiffs' Proposal	Defendant's Proposal	Defendant's Explanation
<i>the molding part is made of one or more of silicone, epoxy, polymethylmethacrylate, polyethylene and polystyrene</i>	“the molding part is made of materials including at least one silicone epoxy, at least one polymethylmethacrylate (PMMA), at least one polyethylene (PE) and at least one polystyrene (PS)”	Construction of this term may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul's Opening Position

Apparent Agreements: None.

Disputes: The dispute here is the meaning of the phrase “at least one of” followed by series of alternatives. This claim form is generally referred to as a Markush claim:

Treatment of claims reciting alternatives is not governed by the particular format

used (e.g., alternatives may be set forth as “a material selected from the group consisting of A, B, and C” or “wherein the material is A, B, or C”). . . . Claims that set forth a list of alternatives from which a selection is to be made are typically referred to as Markush claims, after the appellant in *Ex parte Markush*, 1925 Dec. Comm’r Pat. 126, 127 (1924). Although the term “Markush claim” is used throughout the MPEP, any claim that recites alternatively usable members, regardless of format, should be treated as a Markush claim.

M.P.E.P. 2117 (available at <https://www.uspto.gov/web/offices/pac/mpep/s2117.html>). As explained by the Federal Circuit, “[a] Markush claim is a particular kind of patent claim that lists alternative species or elements that can be selected as part of the claimed invention.” *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1357 (Fed. Cir. 2016). When properly interpreted as a Markush group, the claim language here means *the molding part is made of one or more of silicone, epoxy, polymethylmethacrylate, polyethylene and polystyrene*.

Instead of a traditional Markush interpretation (selecting at least one among the five), TCP asserts that there must be at least separate five selections (one for each of the five). The specification, however, forecloses this narrow interpretation:

For the purposes of this disclosure, “at least one of X, Y, and Z” and “at least one selected from the group consisting of X, Y, and Z” may be construed as X only, Y only, Z only, or any combination of two or more of X, Y, and Z, such as, for instance, XYZ, XYY, YZ, and ZZ.

(J. Ex. 2 (’933 Patent) at 4:27-32.) TCP’s interpretation, therefore, requires ignoring both long-standing law and the contents of the patent. Instead, as previously held by Judge Birotte, this recitation should be interpreted as alternatives consistent with the usage in the specification. *Seoul Semiconductor Co.*, No., 2024 WL 5469238, at *24-26.

2. TCP’s Answering Position

It is undisputed that the plain meaning of “and” in a list is conjunctive such that every item in the list is required. Since at least 2004, a decade before the priority date of the ’933 Patent, Federal Circuit “canon” is in accord, i.e., a claim reciting a list of items using “at least one of ...

and” means “there [has] to be one or more of each item” in the list. *SIMO Holdings Inc. v Hong Kong uCloudlink Network Tech. Ltd.*, 983 F.3d 1367, 1376–77 (Fed. Cir. 2021) (citing *SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 886 (Fed. Cir. 2004)). The specification is consistent with this meaning, always describing the molding part using the exact same language as the claims. J. Ex. 2, 7:9–12, 20:19–21, 22:19–21.

Seoul seeks to remove “and” from the claim and give it a meaning opposite that dictated by the rules of grammar and controlling case law. But the “Markush group” exception and boilerplate language Seoul relies on (*see supra* §III.M.1, 91–92) do not warrant such a departure.

First, this term is not a proper Markush group allowing the selection among a group of alternatives. *See, e.g., Ex Parte Markush*, No. 116637, 1924 WL 333697, at *2 (July 9, 1924) (describing a Markush group as a closed group of alternatives). “A Markush claim contains an ‘improper Markush grouping’ if either: (1) the members of the Markush group do not share a ‘single structural similarity’ or (2) the members do not share a common use.” M.P.E.P. 2117 (available at <https://www.uspto.gov/web/offices/pac/mpep/s2117.html>). Here, neither the specification nor the claim identifies a singular structural similarity or common use for the members. Indeed, there is no such relationship. For instance, in the context of LED phosphor molding, a POSITA would understand that silicone and epoxy are thermosetting resins that cure irreversibly via a hardener or catalyst to form a stable encapsulant matrix. J. Ex. 26, ¶90. Polymethylmethacrylate (PMMA) is a thermoplastic resin that softens with heat and hardens upon cooling. *Id.*, ¶91. On the other hand, polyethylene (PE) and polystyrene (PS) are thermoplastics, but a POSITA would not view them as viable phosphor encapsulants. *Id.*, ¶92. They are typically used as structural carriers, films, or additives—not as optical host matrices. They are used as additives that are added to the resins described above. *Id.* As such, the list is not a proper Markush

group and thus, is not a group of alternatives from which only one can be selected to satisfy the claim. Thus, the claim term must be construed on its face in accordance with long-standing claim construction principles established in *SuperGuide*. *SuperGuide*, 358 F.3d at 886–88 (requiring one of each category where claim read “at least one of a desired program start time, a desired program end time, a desired program service, and a desired program type.”).

Second, the boilerplate language¹⁵ Seoul relies on states that “at least one of X, Y, *and* Z ... *may be construed* as” multiple disjunctive alternatives. J. Ex. 2, 4:27–32. The applicants’ use of “may” is permissive and does not “clearly set forth a definition of the disputed claim term” required to act as a lexicographer (*CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)) and redefine the word “and” to “or.” See *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (“Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and precision.”). Indeed, courts routinely decline to allow permissive language to limit claim terms or satisfy the clarity required for lexicography. See, e.g., *RetailMeNot, Inc. v. Honey Sci. Corp.*, No. CV 18-937-CFC-MPT, 2019 WL 6337719, at *14 (D. Del. Nov. 27, 2019) (use of the “permissive, rather than mandatory language ... ‘may’” did not support departing from the plain and ordinary meaning); *R2 Sols. LLC v. Deezer S.A.*, No. 4:21-CV-122, 2022 WL 36240, at *27 (E.D. Tex. Jan.

¹⁵ Use of this same language in unrelated, but commonly assigned, U.S. Patent Nos. 10,270,007; 9,997,688; 11,824,145; and many others confirms that this language is merely boilerplate and not an attempt at lexicography specific to the ’933 Patent. See *Les Traitments des Eaux Poseidon, Inc. v. KWI, Inc.*, 135 F. Supp. 2d 126, 135 (D. Mass. 2001) (assigning “little weight” to boilerplate language in specification indicating general description of invention was “non-restrictive”); *Am. Piledriving Equip., Inc. v. Geoquip, Inc.*, 675 F. Supp. 2d 605, 611 (E.D. Va. 2009) (“[T]he court declines to accept this boilerplate language as decisive.”), *aff’d*, 637 F.3d 1324 (Fed. Cir. 2011); *D Three Enters., LLC v. SunModo Corp.*, 890 F.3d 1042, 1050–51 (Fed. Cir. 2018) (rejecting patentee’s reliance on specification’s “boilerplate”); *Medtronic Inc. v. Boston Scientific Corp.*, 695 F.3d 1266, 1275 (Fed. Cir. 2012) (“To act as its own lexicographer, a patentee must ‘clearly set forth a definition of the disputed claim term....’”), *rev’d on other grounds* 571 U.S. 191 (2014).

4, 2022) (“Particularly in light of this usage of the permissive word ‘often,’ this additional language is not part of the patentee’s lexicography and therefore should not be included in the Court’s construction.”); *U.S. Well Servs., Inc. v. Halliburton Co.*, No. 6:21-CV-00367-ADA, 2022 WL 819548, at *20 (W.D. Tex. Jan. 17, 2022) (“Therefore, the patentees did not ‘unequivocally define’ an ‘impacted region’ as USWS contends. Indeed, USWS incorrectly attempts to transform the permissive language from the specification into lexicography.”).

Third, the claimed molding part is recited as being made of “materials~~s~~,” i.e., plural materials. Seoul’s construction would allow the molding part to be made of only one of the listed materials, i.e., a single material, thereby impermissibly “read[ing] an express limitation out of the claims.” *Texas Instruments Inc. v. U.S. Int’l Trade Comm’n*, 988 F.2d 1165, 1171 (Fed. Cir. 1993).

For each of the above reasons, the Court should adopt TCP’s proposed construction.

3. Seoul’s Reply Position

TCP asserts that “[i]t is undisputed that the plain meaning of ‘and’ in a list is conjunctive such that every item in the list is required.” (§ III.M.2., *supra* at 92.) The lack of any case citation or reference to an admission by Seoul after this bold and incorrect statement is stark. In fact, case law confirms that “the word ‘and’ can reasonably be understood to denote alternatives, rather than conjunctive requirements.” *Kaufman v. Microsoft Corp.*, 34 F.4th 1360, 1373 (Fed. Cir. 2022). Indeed, the Court confirmed that “we [are] not required to ‘interpret and according to its most common usage in the dictionary’; rather, we ‘must interpret the term to give proper meaning to the claim in light of the language and intrinsic evidence.’” *Id.* at 1373 (quoting *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1362-63 (Fed. Cir. 2008)). The issue is one of context, which here supports the conclusion that the “molding part” must include “at least one” of the listed materials.

TCP's contrary reliance on *SuperGuide Corp. v. DirectTV Enterprises, Inc.*, 358 F.3d 870, is at best misguided. There, the Court relied on additional context, including that the specification explained that "the system's user must choose at least one value for each designated criteria, or the logic would be inoperable." *Id.* at 887 (emphasis added). Moreover, TCP failed to mention that many district courts including the District of Delaware have rejected TCP's narrow interpretation of *SuperGuide*. See, e.g., *TQ Delta, LLC v. Comcast Cable Commc'ns, LLC*, No. 1:15-CV-00611, 2016 WL 7013481, at *8 (D. Del. Nov. 30, 2016) ("*SuperGuide* did not erect a universal rule of construction for all uses of 'at least one of' in all patents.") (citation omitted); see also, e.g., *Fujifilm Corp. v. Motorola Mobility LLC*, No. 12-CV-03587, 2015 WL 1265009, at *8 (N.D. Cal. Mar. 19, 2015) (same). Indeed, *Westwood One, LLC v. Local Radio Networks, LLC*, No. 1:21CV-88, 2023 WL 3115940 at *3 (N.D. Ill. Apr. 25, 2023), provided the following helpful analogy:

Under a three-course chef's dinner, the menu prompts diners to select "one of (1) an appetizer, (2) an entrée, and (3) a dessert." The clear intent is that the diner selects one of each; it's not much of a three-course dinner if you only get one course. But if the diner drops down a level to the entrees and is prompted to pick "one of (1) the chicken, (2) the steak, and (3) the fish," the intent changes. No one is going to expect to get all three, lest the dinner turn into a real-life version of Monty Python's *The Meaning of Life*. The same verbiage, two contexts, two different constructions.

In fact, when addressing this specific patent and claim term, the court in *Seoul Semiconductor*, 2024 WL 5469238, at *24-26, distinguished *SuperGuide* to adopt the correct construction encompassing alternatives. The suggestion that the patent bar has universally adopted TCP's "undisputed" view, therefore, is wrong.

In addition, although he interpreted the claim recitation to require the combination of all five substances in the molded part, Dr. Krames was unaware of any product that included all five distinct polymers together and could not identify a reason why someone would do so. (J. Ex. 25 (Krames Depo.) at 146:25:148:13.) As explained by Dr. Feezell, a person having ordinary skill

would not have considered combining all five polymers together. (Feezell Decl. ¶¶52-54.) Instead, Dr. Krames’s view is solely based on his grammatical interpretation of the claim’s use of “and” rather than “or.” (J. Ex. (Krames Depo.) at 143:33-144:80; 148:14-149:18.)

Moving on to its analysis of the permissible forms of *Markush* groups, TCP’s strained view is both hard to follow and substantively baseless. TCP asserts that “[a] Markush claim contains an ‘improper Markush grouping’ if either: (1) the members of the Markush group do not share a ‘single structural similarity’ or (2) the members do not share a common use.” (§ III.M.2., *supra* at 93.) As an initial matter, the concept of an “improper Markush” group (which is rarely addressed in caselaw and generally only during appeals from the Patent Office) is one of indefiniteness rather than claim construction. *In re Kiely*, No. 2022-1076, 2022 WL 2062163, at *2 (Fed. Cir. June 8, 2022). In *Kiely* the Federal Circuit affirmed a claim rejection based on the recitation “a selection from the group comprising a person, an animal, an animated character, a creature, an alien, a toy, a structure, a vegetable, and a fruit” due to “the breadth of variation among the specified alternatives and the use of the open-ended word ‘comprising’ to define the scope of the list.” *Id.*

To the extent that the Court deems it necessary to consider TCP’s late and ambiguous reference to Markush-based validity issues, plainly that is not an issue here. According to the express language of the claim the materials possess “a common use” – to make the recited “molding part.” TCP’s contrary view that the specification does not identify a “common use” ignores the claim language and specification in favor of irrelevant theoretical uses. Indeed, TCP’s attempt to distinguish between the members of the group largely negates its argument that a person skilled in the art would have interpreted the phrase as requiring all five materials together. (Feezell Decl. ¶¶53-54.)

And finally, although unpublished, the Federal Circuit’s decision in *Lexington Luminance*

LLC v. Amazon.com Inc., 601 F. App’x 963 (Fed. Cir. 2015), suggests district courts should not focus on “the technical correctness of the use of a Markush expression that may have slipped past the examining process.” *Id.* at 968. In other words, this arcane issue of patent law should remain the domain of the Patent Office.

4. TCP’s Sur-Reply Position

Seoul’s retreat from Markush requirements and its criticism of *SuperGuide* is ineffective. *See supra* §III.M.3, 95–98. Seoul itself admitted that “[t]his claim form is generally referred to as a Markush claim,” and as a result, the term allows for the selection of one among a group of alternatives. *See supra* §III.M.1, 91–92. This analysis was the entire basis of Seoul’s argument. But now, when faced with the full implications of using a Markush group—instead of just advantages—Seoul downplays them and conveniently calls Markush groups an “arcane issue of patent law [that] should remain the domain of the patent office.” *See supra* §III.M.3, 98.¹⁶ Patent law does not work that way, particularly when *the patentee declared the term is a Markush group*. Seoul also argues:

According to the express language of the claim the materials possess “a common use” – to make the recited “molding part.” TCP’s contrary view that the specification does not identify a “common use” ignores the claim language and specification in favor of irrelevant theoretical uses.

See supra §III.M.3, 97. Seoul is wrong. “[A] common use” required for Markush members does not relate to the claim language but requires that “the members following ... *must be substitutable*,

¹⁶ *Lexington Luminance LLC* is inapplicable because the issue before the district court was whether the claim was indefinite not whether it was an “improper” Markush group. 601 F. App’x at 968. Similarly, in *In re Kiely*, the Federal Circuit found that “the pending claims recite improper Markush language and are indefinite” under the same principle cited by TCP. 2022 WL 2062163, at *2.

one for the other.” M.P.E.P. 2117; M.P.E.P 803.02 (“Markush-type generic claims ... recite a plurality of *alternatively usable substances or members.*”). As explained by TCP—and *undisputed by Seoul or its expert*—the list of recited compounds includes three different material types that are not alternatives or substitutes for each other. *See supra* §III.M.2, 93–94. Thus, Seoul cannot argue that this term allows selection of one among a group of alternatives.

Regarding *SuperGuide*’s applicability, each of Seoul’s cited cases included reasoning to depart from the plain meaning of the word “and” in the list of elements analyzed. *See supra* §III.M.3, 96. In *TQ Delta* and *Fujifilm*, the phrase “*at least one*” was used in other parts of the claims that clarified one element could be selected from the list of elements. *TQ Delta*, 2016 WL 7013481, at *8 (“the at least one parameter” was used in other claim elements); *Fujifilm*, 2015 WL 1265009, at *8 (“at least one of” was used related to multiple other claim elements). *Kaufman* and *Westwood One* relied on other portions of the specification that clarified one element could be selected from the list. *Kaufman*, 34 F.4th 1360, 1373 (departing from the “common usage” of the word “and” based on “giv[ing] proper meaning to the claim in light of the language and intrinsic evidence”); *Westwood One*, 2023 WL 3115940, at *8 (“The Court does not discount Defendant’s common-sense argument that ‘and’ means ‘and.’ ... When viewed in the context of the larger patent, it is clear [] that only one of the three examples is required.”). Here, Seoul has provided no justification to depart from the common usage of the word “and.” Nor, *does Seoul cite where this term appears in the specification*, any associated context, or any embodiment. Further, the other uses of “at least one” in claim 15 (and other claims) all refer back to individually recited elements, e.g., “at least one of the first and second phosphors” refers back to individual recitations of “a first phosphor” and “a second phosphor,” whereas, the subject term recites a molding part made of *plural* “*materials* including at least one of”

- N. (a) “less than or equal to about 40 nm”
 (b) “ranges from about 520 nm to 570 nm”
 (c) “ranges from about 600 nm to 670 nm”
 (U.S. Patent No. 10,510,933, Claim 15)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
(a) <u>less than or equal to about 40 nm</u> Plain and ordinary meaning, or alternatively: <i>a width having an upper bound of approximately 40 nanometers</i>	“less than or equal to 40 nm”	Construction of [these] term[s] may impact validity/invalidity and/or infringement /non-infringement, and may assist the jury.
(b) <u>ranges from about 520 nm to 570 nm</u> : Plain and ordinary meaning, or alternatively: <i>a range having ends at approximately 520 nanometers and approximately 570 nanometers</i>	“ranges from 520 nm to 570 nm”	
(c) <u>ranges from about 600 nm to 670 nm</u> Plain and ordinary meaning, or alternatively: <i>a range having ends at approximately 600 nanometers and approximately 670 nanometers</i>	“ranges from 600 nm to 670 nm”	

1. Seoul’s Opening Position

Apparent Agreements: The parties appear to agree that much of the claim language requires no construction.

Dispute: The sole dispute is whether to excise the word “about” from these terms.

Much like with the term “inset sidewall” addressed in Section H above, it appears that there is no “fundamental dispute” with respect to these terms. In particular, TCP’s proposal to essentially rewrite Claim 15 to delete three instances of the term “about” seems unlikely to alter the claims or defenses in this litigation. Instead, Seoul’s central concern is unrelated to this litigation and concerns the potential preclusive effects as to future litigation. Of course, claim construction is not about rewriting claims or rendering advisory opinions for future cases. The Court should therefore resolve this dispute by merely rejecting TCP’s flawed proposal to amend the claims as examined

and issued by the Patent Office.

Should TCP provide a meaningful explanation for how this dispute matters, Seoul will address this issue upon reply.

2. TCP's Answering Position

The dispute here centers on the fact that no tolerances are put on the “about” limitation in the terms, and thus, there is no certainty as to when a particular device could be infringing or not. While Seoul merely proposes that the word “about” be replaced with “approximately,” that fails to resolve the issue. For example, claim 15 recites an LED package that includes “a first phosphor configured to emit green light” where “a peak wavelength of the first phosphor **ranges from about 520 nm to 570 nm.**” J. Ex. 2, claim 15. The specification describes two ranges for green light:

- “[a] first peak wavelength of the green light of the first phosphor may include a first **range from about 500 nm to about 570 nm**” (*id.*, 2:56–58, 13:11–13, 20:25–29); and
- “[a] peak **wavelength** of the green light of the first phosphor may include a **range from about 520 nm to 570 nm**” (*id.*, 2:31–32, 20:25–29).

The question related to the scope of the claim is: does a peak wavelength that falls into the 500 nm to 520 nm range read on claim 15? What about the range of 510 nm to 520 nm? With no tolerance specified, the metes and bounds of these terms are uncertain in view of the different ranges provided in the specification. TCP's proposed constructions provide the certainty necessary for a POSITA to understand the scope of these terms.

3. Seoul's Reply Position

For these terms TCP presents the argument that claim constructions must include “tolerances.” (§ III.N.2., *supra.*) Without a case citation it is unclear what source TCP has for this unique view. The Federal Circuit, however, has long accepted the use of “about.” *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Labs., Ltd.*, 476 F.3d 1321, 1326 (Fed. Cir. 2007) (citing *Pall Corp.*

v. Micron Separations, Inc., 66 F.3d 1211, 1217 (Fed. Cir. 1995)). Rather than address the meaning of “about” as used in the claims of the ’933 Patent, TCP suggests deleting that language from the claims. No rule of construction permits that result.

4. TCP’s Sur-Reply Position

Seoul does not address claim scope when the specification defines two close ranges, e.g., for green light “about 500 nm to about 570 nm” and “about 520 nm to 570 nm,” but the claim recites “about 520 nm to 570 nm.” With no tolerance specified, the metes and bounds are uncertain in view of the different ranges.

O. “user interface member” (U.S. Patent No. 11,632,836, Claim 1)

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>an interface for user input</i>	Indefinite	Construction of this term may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Apparent Agreements: None.

Dispute: This is the ninth claim term for which TCP asserts the Patent Office mistakenly issued indefinite language.

As discussed above, the legal standard for indefiniteness asks whether the “claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus*, 572 U.S. at 901. The simple three-word phrase at issue here is one that does not even require the input of person of skill to divine its meaning. As the Federal Circuit held in *Phillips*, “[i]n some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily

apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314. To be sure, user interfaces were once novel features beyond the grasp of most judges and juries, but that era ended decades ago. Today such features are ubiquitous, requiring little more than the phrase itself to evoke a sufficiently clear understanding. Reference to such established technologies are sufficiently definite. *Nature Simulation Sys. Inc. v. Autodesk, Inc.*, 50 F.4th 1358, 1368 (Fed. Cir. 2022); *ClearOne, Inc. v. Shure Acquisition Holdings, Inc.*, 35 F.4th 1345, 1350 (Fed. Cir. 2022).

Given the vague nature of TCP’s challenge, therefore, Seoul will address this issue on reply should TCP colorably explain why the meaning of this phrase is insufficiently certain to meet the *Nautilus* standard.

2. TCP’s Answering Position

The term “user interface member” does not appear in the specification. The specification describes a “user interface connected to the controller” (J. Ex. 1, 2:22–36), but fails to describe the term “member.” As discussed below, the applicants specifically chose to include the term “member” in claim 1 multiple times and the canons of claim construction necessitate that the term “member” be given meaning. *See Merck*, 395 F.3d at 1372 (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”); *see also Chicago Bd. Options Exch., Inc. v. Int’l Sec. Exch., LLC*, 677 F.3d 1361, 1369 (Fed. Cir. 2012) (“The general presumption that different terms have different meanings remains.”) (citing *CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co. KG*, 224 F.3d 1308, 1317 (Fed. Cir. 2000)). Seoul’s proposal fails to account for or explain the term “member” in the claim, establishing that even Seoul fails to understand with reasonable certainty the meaning of the term “user interface

member” as opposed to “user interface.” *Nautilus*, 572 U.S. at 901, 910.

The terms “user interface member,” “user interface” separately, and others were added to claim 1 during prosecution following a rejection based on U.S. Application Publication No. 2013/0088155 to Maxik (“Maxik”). J. Ex. 11, TCP-SEOUL-00006515, TCP-SEOUL-00006527. The applicants distinguished Maxik that taught an “I/O interface 66 may receive a lighting routine program from *a user*” (J. Ex. 28, ¶[0155]) by amending claim 1 and arguing that “Maxik fails to disclose or suggest each and every one of the features now recited in claim 1.” J. Ex. 11, TCP-SEOUL-00006534. Following a second rejection, the applicants further amended the term that recited “user interface” alone to recite “user interface member” explaining that the amendment was “for correction of informalities, better wording, and/or *clarification*” and filed a terminal disclaimer. *Id.*, TCP-SEOUL-00006565, TCP-SEOUL-00006572. The claims were then allowed by the examiner. *Id.*, TCP-SEOUL-00006578–TCP-SEOUL-00006585.

Thus, the applicants incorporated the term “member” with “user interface” in not just one response to an office action but two. This underscores that the applicants were ascribing a particular meaning to the term “member”—separate and apart from the term “user interface”—that should not be ignored now. Further, inclusion of the term “member” is a departure from the applicants’ claims in the parent application to the ’836 Patent that recited a “user interface” throughout. J. Ex. 29, claims 2, 5, 7, and 15.

Given no explanation in the specification or prosecution history for the difference between the terms “user interface” and “user interface member,” a POSITA would not be informed with reasonable certainty of the meaning of the term “user interface member” required by the claims as compared to the term “user interface” rendering the term indefinite. J. Ex. 26, ¶¶96-99; *Nautilus*, 572 U.S. at 901, 910.

3. Seoul's Reply Position

For the three-word term “user interface member” TCP is troubled by the specification’s use of the two-word term “user interface.” This merely reprises the same incorrect view that the claims must use the identical terminology used in the specification. *Blue Calypso*, 815 F.3d at 1345. TCP also cites inapt caselaw suggesting that “user interface member” cannot be construed consistently with the specification’s usage of “user interface.” The *Merck* decision cited by TCP concerned a claim construction that rendered the qualifier “on an alendronic acid active basis” unnecessary. *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005). The Court, although concerned with the rejected alternative, did not suggest that alone created an immutable “cannon of claim construction” as TCP suggests. (§ III.O.2., *supra* at 103.) Instead, the Court merely stated the truism that “[a] claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.” *Merck*, 395 F.3d at 1372. That preference does not remotely suggest that the claim term “user interface member” cannot have the same meaning as “user interface” as used in the specification.

Moreover, the second case cited by TCP, *Chicago Board Options Exchange, Inc. v. International Security Exchange, LLC*, 677 F.3d 1361 (Fed. Cir. 2012), expressly acknowledged that similar terms can be interpreted to have the same meaning. *Id.* at 1368-69 (citation omitted); *see also Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1282 (Fed. Cir. 2017). Rather than the rigid rule TCP suggests, here again resolution should rely on a context-specific analysis of the relevant evidence. *See Chicago Bd. Options Exchange*, 677 F.3d at 1369 (analyzing the intrinsic record).

Moreover, TCP’s discussion of the prosecution history is at best misdirected. TCP suggests that the term “user interface” and “user interface member” necessarily reflected distinct concepts

in claim 1 during prosecution. The complete claim amendment indicating additions (underlining) and deletions (strikethrough) provided:

1. (Currently Amended) A lighting device ~~light-emitting apparatus~~ comprising:
a first light emitter ~~configured to emit visible light, the first light emitter~~ comprising a plurality of light sources each being configured to emit light with a different color temperature having color temperatures different from each other;
a second light emitter comprising at least one light emitting structure configured to emit light having a longer peak wavelength than that emitted from the first light emitter; ~~configured to emit infrared rays;~~ and
a controller configured to adjust characteristics of light emitted from the visible light and the infrared rays by controlling the first and second light emitters; and [[.]]
a user interface member configured to receive input of a user and connected to the controller.
wherein each of the light sources comprises a light-emitting diode chip and a wavelength conversion member [[unit]] configured to convert a wavelength range of light emitted from the light-emitting diode chip, and
wherein the controller is further configured to disable the second light emitter in response to receiving an input for prohibiting emission of the light emitting structure through the user interface.

(J. Ex. 11 at TCP-SEOUL-00006527.) As the Court can readily confirm, the term “user interface member” was initially added via amendment, with a later element – “the user interface” – errantly relying on that term for antecedent basis. *Id.*; see also *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342–43 (Fed. Cir. 2008) (discussing the use of the word “the” to indicate reference to an earlier recitation); Feezell Decl. ¶¶55-56.). Dr. Krames conceded as much during his deposition. (J. Ex. 25 (Krames Depo.) at 155:9-157:12.) As shown below, the antecedent basis flaw was subsequently corrected by amendment:

1. (Currently Amended) A lighting device comprising:

- a first light emitter comprising a plurality of light sources each being configured to emit light with a different color temperature;
- a second light emitter comprising at least one light emitting structure configured to emit light having a longer peak wavelength than that emitted from the first light emitter;
- a controller configured to adjust characteristics of light emitted from the first and second light emitters; and
- a user interface member configured to receive input of a user and connected to the controller,

wherein each of the light sources comprises a light-emitting diode chip and a wavelength conversion member configured to convert a wavelength range of light emitted from the light-emitting diode chip, and

wherein the controller is further configured to disable the second light emitter in response to receiving an input for prohibiting emission of the light emitting structure through the user interface member.

(J. Ex. 11 at TCP-SEOUL-00006565.) Indeed, Dr. Krames conceded that he had no basis to opine that the amendment was not merely a correction of an earlier error rather than an indication that a “user interface” is materially different from a “user interface member.” (J. Ex. 25 (Krames Depo.) at 161:19-162:22.) The Court, therefore, should reject defendant’s attempt to manufacture a distinction.

4. TCP’s Sur-Reply Position

Seoul suggests that this Court ignore case law requiring every claim term be given meaning. *See supra* §III.O.3, 105. Regardless of whether this is canon,¹⁷ “truism,” or “preference,” Seoul cites no support from the specification or prosecution history that outweighs

¹⁷ Multiple courts describe giving meaning to all claim terms as a “canon” of claim construction. *E.g., Ideal Instruments, Inc. v. Rivard Instruments, Inc.*, 498 F. Supp. 2d 1131, 1154 (N.D. Iowa 2007); *Stevenson v. Gulfstream Coach, Inc.*, No. CV 06-7626 MMM(PJWX), 2007 WL 5760837, at *17 (C.D. Cal. Aug. 1, 2007); *SignalQuest, Inc. v. Chou*, No. 11-CV-392-JL, 2016 WL 3248246, at *14 (D.N.H. June 13, 2016).

its application, instead arguing for a “context-specific analysis of the relevant evidence”¹⁸ and explaining that the second amendment to the prosecution history—to add “member” to the last claim element—was to correct an “antecedent basis” mistake. *Id.*, 33–35. Seoul, however, does not make a similar argument or provide any reasoning why the term “user interface member” rather than “user interface” was added in the first amendment. *Id.* Seoul merely states that the terms should “have the same meaning” with no support. *Id.* This is not a type of “obvious minor typographical and clerical errors in patents” that are addressed judicially. *Novo Indus.*, 350 F.3d at 1357.

**P. “a second light emitter comprising at least one light emitting structure”
(U.S. Patent No. 11,632,836, Claim 1)**

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>a structure including at least one light emitting device</i>	“a second light emitter comprising at least one infrared ray emitter”	Construction of this term may impact validity/invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Apparent Agreements: None.

Dispute: Once again, the dispute is whether the broad claim language issued by the Patent Office must be constrained to specific narrow details selected by TCP from the specification. Here, TCP interprets a “light emitting structure” to require an “infrared ray emitter.” Neither lexicography nor disclaimer, however, necessitate that overly narrow interpretation.

¹⁸ Despite Seoul’s statement that *Chicago Board* “expressly acknowledged that similar terms can be interpreted to have the same meaning” (Reply, 33), *Chicago Board* actually determined the opposite: “In effect, CBOE argues that ‘store,’ ‘apply,’ and ‘contain’ have similar meanings. **We disagree.**” 677 F.3d at 1368-69 (citation omitted). Further, *Bid for Position, LLC v. AOL, LLC*, 601 F.3d 1311, 1317–18 (Fed. Cir. 2010) is inapplicable because both terms appeared in the specification that “used the terms interchangeably,” which is not the case here. *Id.*

As to lexicography, rather than a narrow definition of the “second light emitter,” the specification more broadly discloses that “[t]he second light emitter may include second light-emitting diodes configured to emit infrared rays having different wavelength ranges[.]” (J. Ex. 1 (’836 Patent) at 2:49-51 (emphasis added).) Moreover, the patent confirms that the use of the qualifier “second” was not intended to import any specific meaning to the corresponding structure. (*Id.* at 5:12-18 (“Although the terms ‘first,’ ‘second,’ etc. may be used herein to describe various types of elements, these elements should not be limited by these terms. These terms are used to distinguish one element from another element. Thus, a first element discussed below could be termed a second element without departing from the teachings of the disclosure.”).) Indeed, rather than limit the light emitters to specific wavelength ranges (*e.g.*, infrared), the ’836 Patent explains “[t]he first to n^{th} light-emitting diodes LED11 to LED1n may emit visible light of different wavelength ranges, for example, light having red, green, blue, amber, and cyan colors.” (*Id.* at 9:21-24.) Requiring the “second” such device to provide light in the infrared range only, therefore, finds no support in any definitional language in the written description.

As to the prosecution history, TCP provides a series of citations, none of which remotely supports its argument. TCP’s first citation is to the as-filed Claim 1. (D.I. 105-1 at 30 (citing D.I. 106 at 512 (TCP-SEOUL-00006422).) That early version of application claim 1 recited “a second light emitter configured to emit infrared rays.” (D.I. 106 at 512 (TCP-SEOUL-00006422) (emphasis added).) That specific language, however, was deleted via amendment. (*Id.* at 520 (TCP-SEOUL-00006527).) This change reflects the antithesis of a disclaimer sufficient to override ordinary meaning, as the portion of the claim addressed to the wavelength range of the “second light emitter” was broadened rather than narrowed.

TCP’s second citation identifies an Examiner’s Office Action. (D.I. 105-1 at 30 (citing D.I.

106 at 513-18 (TCP-SEOUL-00006511-16)).) The version of the claim addressed in the office action, however, was the same one addressed in the preceding paragraph, *i.e.*, it required “infrared rays.” (*Id.*) Any statement made by the Examiner regarding the claims prior to the deletion of the “infrared rays” recitation, therefore, is irrelevant. Indeed, such statements are doubly irrelevant, as an Examiner’s unilateral views cannot create a disclaimer. *Alfred E. Mann Found. for Sci. Rsch. v. Cochlear Corp.*, 841 F.3d 1334, 1341 (Fed. Cir. 2016).

Remarkably, TCP’s remaining citations are to: (1) the Amendment where the “infrared rays” language was deleted; (2) an ensuing Office Action where the term “infrared” was not mentioned; (3) an additional Amendment where the term “infrared” went unmentioned; and (4) the Examiner’s Reasons for Allowance which again did not mention “infrared.” (D.I. 105-1 at 30 (citing (D.I. 106 at 519-28, 529-33, 534-43, 544-51 (TCP-SEOUL-00006526-35, TCP-SEOUL-00006544-48, TCP-SEOUL-00006564-73, TCP-SEOUL-00006578-85))).) The argument that deleted claim language should be reinserted into a claim on the basis of prosecution-history disclaimer lacks logical or legal support. Instead, “[a] patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full scope.” *Thorner*, 669 F.3d at 1366; *see also id.* at 1366-67 (“We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that. To constitute disclaimer, there must be a clear and unmistakable disclaimer.”). To the extent that a construction is necessary, therefore, the term “a second light emitter comprising at least one light emitting structure” should be construed to mean *a structure including at least one light emitting device*.

2. TCP’s Answering Position

Seoul’s proposed “plain and ordinary meaning” construction/alternative impermissibly

broadens this term beyond what is disclosed in the specification and incorporates another vague term, “light emitting device,” that—like the claim term at issue “light emitting structure”—does not appear in the specification. As explained below, the meaning of “light emitting structure” cannot be broad enough to encompass any “device” that emits visible light. Therefore, the Court should adopt TCP’s proposal that stays true to the specification and the disclosed invention.

For context, this term appears in Claim 1 in relevant part below:

a first light emitter comprising a plurality of light sources each being configured to emit light with a different color temperature;

a second light emitter comprising at least one *light emitting structure* configured to emit light having a longer peak wavelength than that emitted from the first light emitter;

a controller ...

J. Ex. 1, Claim 1.

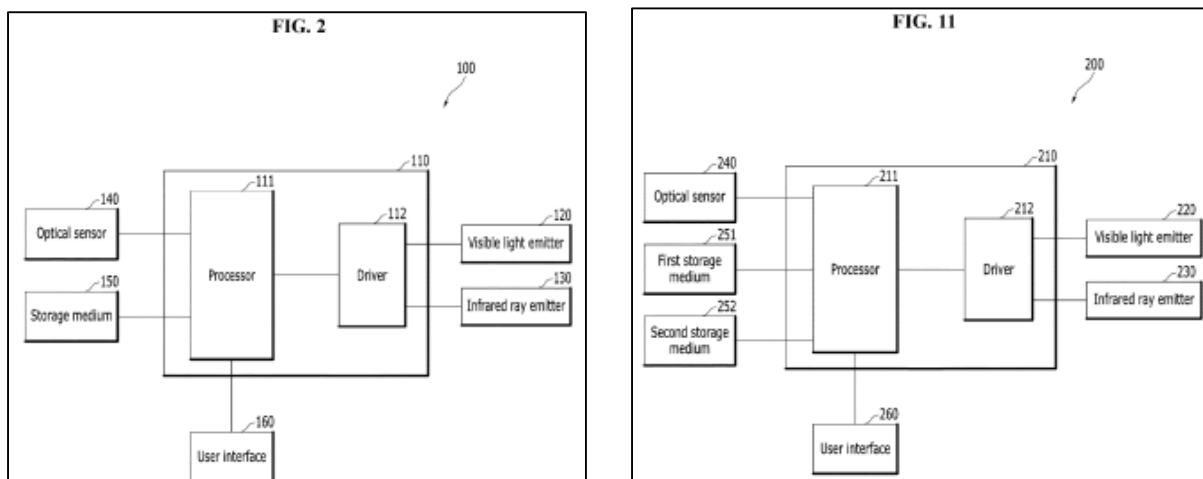
Starting with the specification, as mentioned above, the term “light emitting structure” does not appear in the specification and was added during prosecution. J. Ex. 11, TCP-SEOUL-00006527; J. Ex. 26, ¶103. While “light emitting structure” read in a vacuum can lead to a broad, almost limitless, interpretation, claim construction principles require reading the term in the context of the specification. *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“We cannot look at the ordinary meaning of the term ... in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”); *Phillips*, 415 F.3d at 1313 (A POSITA “is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.”). And the specification consistently describes the alleged invention as including two light emitters, one that emits “visible light” and one that emits “infrared rays.” J. Ex. 1, Abstract, 1:59–63, 2:49–52; J. Ex. 26, ¶104.

Specifically, the applicant describes the problem to be solved as people “spend[ing] more time indoors than outdoors under the sunlight” and when a lighting device “can output light having a spectrum similar to that of the sunlight, light emitted from the lighting device would look natural and promote user's health.” J. Ex. 1, 1:36–44. To that end, the applicant proposed a lighting device that included both visible light and infrared rays that “may have a positive influence on the human body organs” and further:

As described above, the solar spectra are changed according to the passage of time, and most living things have adapted to act according to a change in the sunlight. ***When an indoor lighting device may emit both infrared rays and visible light***, and the emitted visible light and infrared rays have characteristics similar to those of the sunlight that changes according to the passage of time, ***the lighting device can provide effects similar to those provided by the sunlight including light of various wavelength ranges***, and can be recognized by a person as if light similar to the sunlight is being provided.

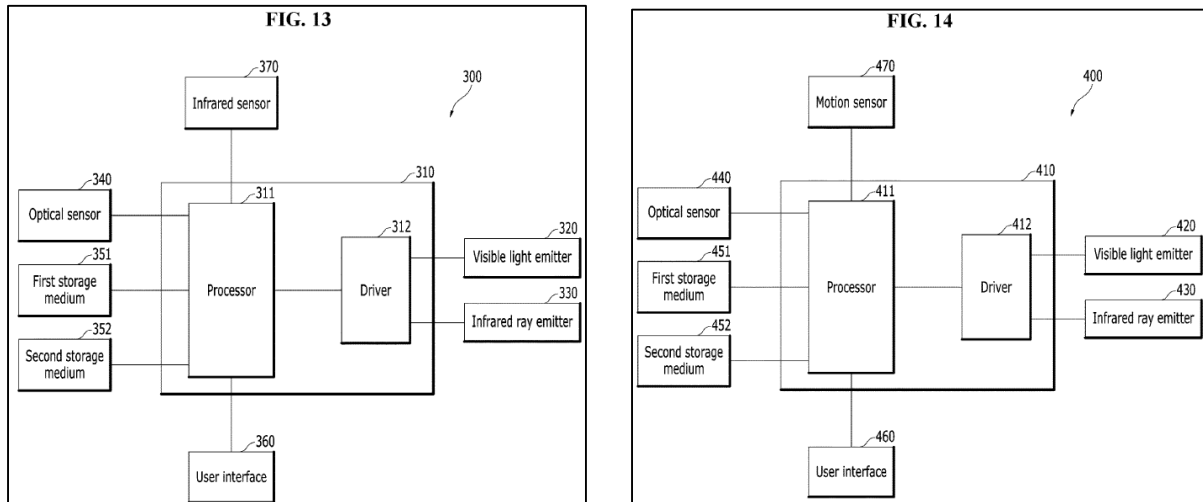
Id., 6:43–63

Thus, ***every embodiment*** described in the specification includes a “visible light emitter” and an “infrared ray emitter.” J. Ex. 26, ¶¶105–106. For example, FIGS. 2–10 and FIGS. 11–12 illustrate two embodiments of an apparatus with visible light emitter 120/220 and infrared ray emitter 130/230:



J. Ex. 1, 6:66–7:2, 7:55–61, 12:60–13:5, FIGS. 2–12. FIGS. 13 and 14 illustrate additional

embodiments of an apparatus with visible light emitter 320/420 and infrared light emitter 330/430:



Id., 14:19–34, 14:65–15:12, FIGS. 13–14. The specification discloses that this arrangement with both a visible light emitter and an infrared ray emitter “may have a spectrum similar to that of sunlight in the IR wavelength range corresponding to the infrared rays as well as the VL wavelength range corresponding to the visible light [and] may look natural and can provide effects similar to those provided by the sunlight.” *Id.*, 9:1–13.

The Federal Circuit has “explained that a patent’s express purpose of the invention ‘informs the proper construction of claim terms.’” *Sequoia Tech., LLC v. Dell, Inc.*, 66 F.4th 1317, 1326 (Fed. Cir. 2023) (quoting *Kaken Pharm. Co. v. Iancu*, 952 F.3d 1346, 1352 (Fed. Cir. 2020)); see also *U.S. Foam, Inc. v. On Site Gas Sys., Inc.*, 735 F. Supp. 2d 535, 542 (E.D. Tex. 2010) (“*Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter.”) Here, a POSITA would recognize that the express purpose of the invention is to mimic sunlight and that can only be accomplished using a visible light emitter with an infrared ray emitter and that the applicant only described embodiments with both. J. Ex. 26, ¶¶107–108; see, e.g., *U.S. Foam*, 735 F. Supp. 2d at 549 (finding that the broad term “gas comprising nitrogen” excluded “air” because “the patentee made clear throughout the specification

that the invention does not use air” and construing as “a gas, other than air, that includes nitrogen ...).

Moreover, Seoul argues that its construction results in both claimed light emitters “emit[ing] visible light.” *See supra* §III.P.1, 109 (citing J. Ex. 1, 9:21–24 (discussing the structure of the “visible light emitter 120”)). If both claimed light emitters emit visible light, then Seoul’s construction would exclude from the claim the preferred embodiment (and all embodiments) described in the specification because (1) the specification explains that “infrared rays included in the sunlight are **not recognized by the human eye**” (J. Ex. 1, 6:43–45), i.e., are not visible; and (2) **all embodiments** teach both a visible light emitter and an infrared ray emitter. J. Ex. 26, ¶¶109–110. While “[w]e are mindful to not limit claims to a preferred embodiment ... we also recognize that ‘[a] claim construction exclud[ing] a preferred embodiment is rarely, if ever correct.’” *Sequoia*, 66 F.4th at 1326–27 (quoting *Kaufman v. Microsoft Corp.*, 34 F.4th 1360, 1372 (Fed. Cir. 2022) (cleaned up; internal citations omitted)). Indeed, such an interpretation results in enablement and written description violations because there is no support in the specification for both light emitters being directed to visible light. *See* 35 U.S.C § 112.

Finally, Seoul’s appeals to the prosecution history to support its broad interpretation (*see supra* §III.P.1, 109–110) cannot supplant the express description of the invention in the specification and cannot be used to manufacture claims that are not enabled or supported by the written description. *Phillips*, 415 F.3d at 1317 (“[B]ecause the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.”); *see also Prima Tek II, L.L.C. v. Polypap, S.A.R.L.*, 318 F.3d 1143, 1151 (Fed. Cir. 2003) (“[D]rawing inferences of the meaning of claim terms from an examiner’s silence

is not a proper basis on which to construe a patent claim.”); *Brown v. Baylor Health Care Sys.*, 662 F. Supp. 2d 669, 682 (S.D. Tex. 2009) (“[A] patent examiner’s finding of validity carries less weight on issues that the examiner did not specifically consider.”).

As such, the Court should construe “a second light emitter comprising at least one light emitting structure” as “a second light emitter comprising at least one infrared ray emitter” or alternatively “a second light emitter comprising a non-visible light emitter” consistent with the specification.

3. Seoul’s Reply Position

For this recitation TCP asserts that the broader claim language must be narrowed because “the specification consistently describes the alleged invention as two light emitters, one that emits ‘visible light’ and one that emits ‘infrared rays.’” (§ III.P.2., *supra* at 111.) TCP’s argument is both legally and factually incorrect.

Consistent with *Phillips*, the analysis must start with the claim language. There can be no fair argument that the plain and ordinary meaning imposes the narrow scope TCP seeks, and therefore, TCP must support its view based on either lexicography or disclaimer. *Thorner*, 669 F.3d at 1365. TCP does not justify either exception, instead relying on a vague theory of narrowing-by-consistency.

The Federal Circuit has regularly rejected the argument that a specification that “consistently describes” a feature thus narrows broader claim language. *See, e.g., Samsung Elecs. Co. v. Power2B, Inc.*, No. 2023-1629, 2025 WL 957287, at *4 (Fed. Cir. Mar. 31, 2025) (“Though the Board and Power2B both note that the specification ‘consistently’ describes the detector assembly as comprising two or more detector elements . . . the preferred embodiments cannot limit otherwise broad claims in the absence of an unmistakable disavowal of claim scope.”); *see also*

Ethicon LLC v. Intuitive Surgical, Inc., No. 2020-1528, 2021 WL 3716397, at *3 (Fed. Cir. Aug. 23, 2021) (same); *Sprint Spectrum L.P. v. Gen. Access Sols., Ltd.*, 812 F. App'x 999, 1003 (Fed. Cir. 2020) (same). Similarly, the Court has rejected TCP's "every embodiment" argument (§ III.P.2, *supra* at 112) as being insufficient to overwrite broader claim language. *See Thorner*, 669 F.3d at 1367; *Laryngeal Mask Co. v. Ambu*, 618 F.3d 1367, 1371 (Fed. Cir. 2010).

In addition, as explained in Seoul's opening brief, the specification is not nearly so narrow as TCP suggests. (§ III.P.1., *supra* at 112-13.) Rather than contend with Seoul's analysis, TCP falsely asserts that "Seoul argues that its construction results in both claimed light emitters 'emit[ing] visible light.'" (*Id.* at 114 (emphasis added).) No such argument was made or even implied. Instead, Seoul correctly asserted that specific frequency ranges should not be imported into the claims. By again addressing an argument different than the one presented TCP at best presents misdirection rather than a reasoned response.

TCP also cites to the truism that "a patent's express purpose of the invention 'informs the proper construction of claim terms.'" (§ III.P.2., *supra* at 114 (citing *Sequoia Tech., LLC v. Dell, Inc.*, 66 F.4th 1317, 1326 (Fed. Cir. 2023))). Informing the analysis, however, is far different from importing limitations into broader claims. Under the Federal Circuit's *Phillips* standard, the claims, specification, prosecution history, and extrinsic evidence all inform the analysis. 415 F.3d at 1314. In contrast, what TCP suggests is that the Court eschew the ordinary sources of claim construction and instead improperly graft a perceived purpose onto the claims. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1370 (Fed.Cir.2003) (citation omitted) ("[I]t is generally not appropriate 'to limit claim language to exclude particular devices because they do not serve a perceived 'purpose' of the invention.'") (emphasis added).

Finally, Dr. Krames proposes limiting the claims because in his view, "sometimes funny

things happen in prosecution.” (J. Ex. 25 (Krames Depo.) at 168:2-8.) Indeed, he suggested that the examiner was mistaken in issuing the claims as amended. (*Id.* at 170:22-171:5.) Dr. Krames’s disagreement with the examiner is not a proper issue for claim construction.

4. TCP’s Sur-Reply Position

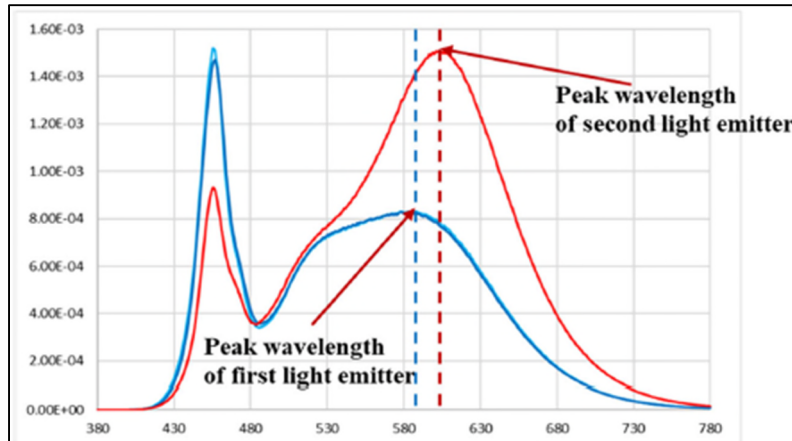
As an initial matter, Seoul states that:

Rather than contend with Seoul’s analysis, TCP falsely asserts that “Seoul argues that its construction results in both claimed light emitters ‘emit[ing] visible light.’” (TCP Opening Br. at 43 (emphasis added).) No such argument was made or even implied.

See supra §III.P.3, 116. But, Seoul did specifically argue that the first and second “light emitters” “may emit visible light”—a fact that Seoul now seemingly forgets:

Indeed, rather than limit the light emitters to specific wavelength ranges (*e.g.*, infrared), the ‘836 Patent explains “[t]he first to *nth* light-emitting diodes LED11 to LED1n may emit visible light of different wavelength ranges, for example, light having red, green, blue, amber, and cyan colors.” (*Id.* at 9:21-24.)

See supra §III.P.1, 109. And, while Seoul’s infringement mappings are not relevant to claim construction, they do rebut an allegation that TCP “falsely” asserted a fact. Seoul specifically accuses a TCP product by mapping the first and second light emitters to LEDs *emitting visible light*, i.e., peak wavelengths of ~590 and 600 nm (yellow/orange light):



Far from Seoul’s argument not being “made or even implied,” Seoul expressly “made” the argument and then explicitly used that argument to accuse a TCP product.

Each of Seoul’s cited cases are inapposite and involve a term that appears in the specification of the respective patent. *E.g.*, *Samsung*, 2025 WL 957287, at *3 (“detector assembly” appears in specification); *Ethicon*, 2021 WL 3716397, at *3 (“tool mounting portion” appears in specification); *Sprint Spectrum*, 812 F. App’x at 1003 (“scanning beam information” appears in specification). Here, the term “light emitting structure” **does not appear** in the specification. Because of this, Seoul’s reliance on *Thorner* and *Laryngeal* (*see supra* §III.P.3, 116) is misplaced—an applicant cannot engage in specification “lexicography” or “disclaimer” if the term is not in the specification.

Seoul does not identify any embodiment or description in the specification that would support its construction of this term allowing for the second light emitter’s “light emitting structure” to emit visible light. Seoul’s expert likewise could not identify “anywhere else in the specification” that discloses an embodiment without an infrared ray emitter.¹⁹ Indeed, Seoul does

¹⁹ Labeling one a “first” or “second” light emitter is of no consequence when only devices with a “visible light emitter” and “infrared ray emitter” are taught. In Claim 1, the “visible light emitter” can only be the “first light emitter” because the “second light emitter” has to “emit light having a longer peak wavelength” and infrared light has a longer peak wavelength than visible light.

not even cite Dr. Feezell for any analysis related to this term. *See supra* §III.P.1, 115–117. Thus, Dr. Krames analysis remains unrebutted.

**Q. “wherein one of the plurality of portions of the first extension is disposed between the plurality of portions of the second extension”
(U.S. Patent No. 9,929,314, Claim 3)**

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
<u>wherein one of the plurality of portions of the first extension . . .</u> Plain and ordinary meaning, or alternatively: <i>at least one of the portions of the first extension falls within the region between at least two portions of the second extension</i>	Indefinite	Construction of [these] terms may impact validity/ invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Apparent Agreements: None.

Dispute: These two claim terms are the final terms for which TCP raises an indefiniteness defense. Because the precise nature of that defense is unknown, Seoul’s analysis is intended to provide the Court with the context necessary to achieve reasonable certainty regarding the meanings of this term.

To properly understand the recited extensions, it is helpful to start with the relevant portions of claim 1 where the term is introduced:

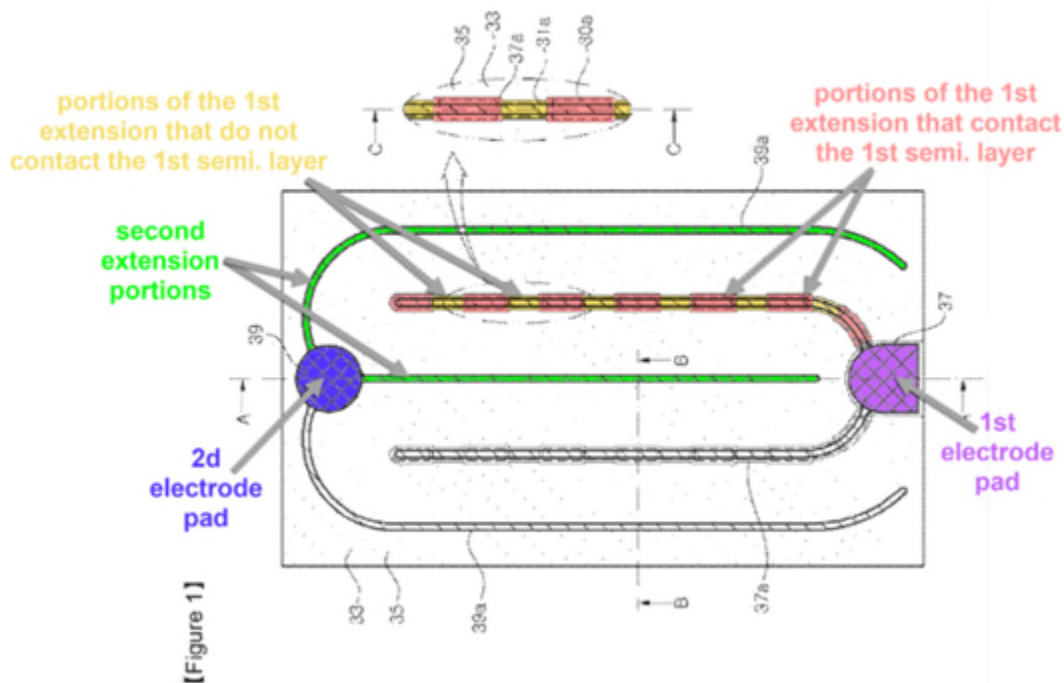
1. A light emitting diode (LED) device comprising:

* * *

 a first electrode pad . . . ;
 a second electrode pad . . . ;
 a first extension extending from the first electrode pad; and
 a second extension extending from the second electrode pad, wherein the first extension includes first portions in contact with the first semiconductor layer and second portions not in contact with the first semiconductor layer, wherein one of the first portions and one of the second portions are alternately disposed along the first extension, and wherein the second extension includes a plurality of portions extending from the second

electrode pad.

Although not limiting, these features can be understood from figure 1 (annotated and with color added below) and its corresponding description in the specification:



The first electrode pad 37 (purple) provides an electrical connection to the first semiconductor layer. (J. Ex. 7 ('314 Patent) at 11:29-38.) In order to improve current spreading to the first semiconductor layer, a first electrode extension 37a is provided. The first electrode extension 37a is an example of the claimed “first extension” which is described as “extending from the first electrode pad.”

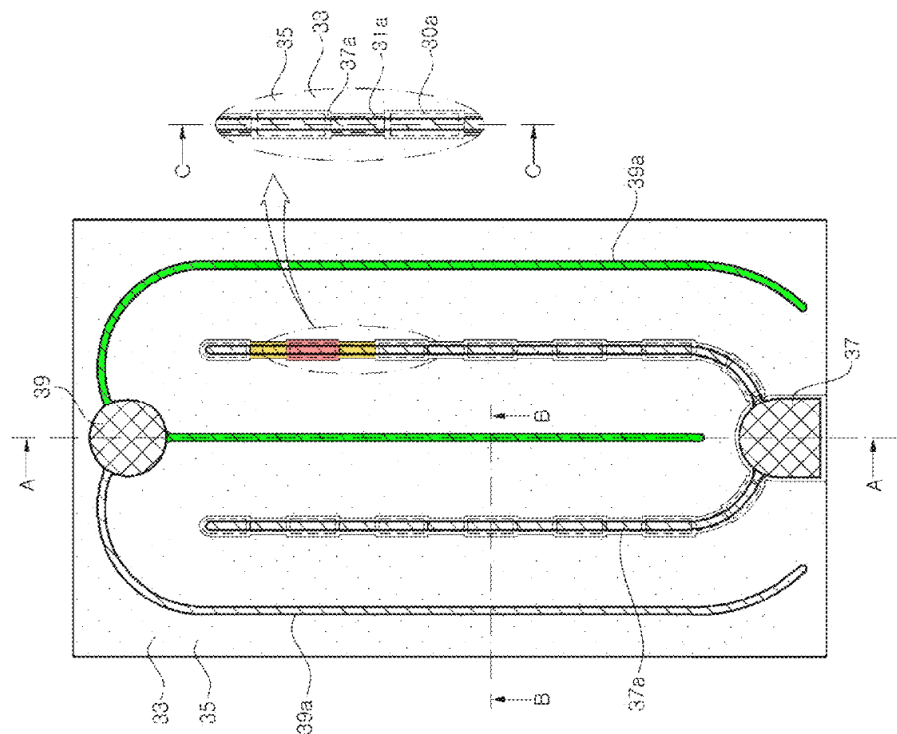
Instead of contacting the first semiconductor layer along its entire length, the first electrode extension 37a is described as having two different types of portions along its length. One type of portion (peach) of the first electrode extension 37a contacts the first semiconductor layer. (*Id.* at 11:18-23.) For a second type of portion (yellow) the first electrode extension 37a is insulated from the first semiconductor layer, and thus contact is not provided. (*Id.* at 14:3-21).

The second electrode pad 39 (blue) provides an electrical connection to the second

semiconductor layer. (*Id.* at 11:24-27; 11:39-44.) Similar to the first electrode pad 37, the second electrode 39 is described as having extensions. However, whereas the recited portions of the first extension alternate along the length of the first extension, the second extension is recited as having “a plurality of portions extending from the second electrode pad.” Two exemplary portions of the recited “second extension” that each extend from the second electrode pad are colored green in the image above.

Moving on to the language of claim 3, it can readily be understood that at least “one of the plurality of portions of the first extension is disposed between the plurality of portions of the second extension.” In the version of figure 1 provided below, three example portions of the first extension are colored.

Those portions of the first extension are disposed in the region between the two portions (green) of the second extension. Thus, the disputed recitation in claim 3 means *at least one of the portions of the first extension falls*



【Figure 1】

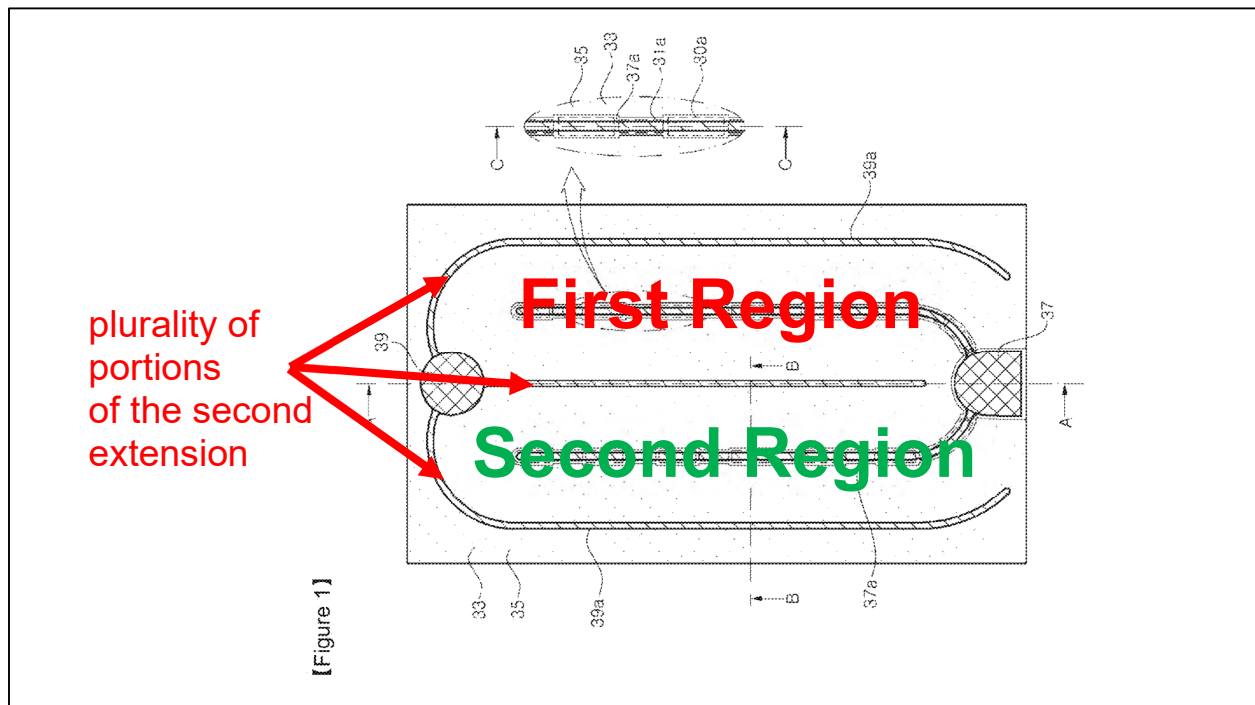
within the region between portions of the second extension.

2. TCP's Answering Position

The term “wherein one of the plurality of portions of the first extension is disposed between the plurality of portions of the second extension” is indefinite because it fails to inform a POSITA, with reasonable certainty, when one “portion” of the first extension is “disposed between the plurality of portions of the second extension” and when it is not. *Nautilus*, 572 U.S. at 901. The inclusion in Claim 3 of “disposed between the plurality of portions” leads to ambiguity in two respects, neither of which is resolved by the patent’s claims, the specification, nor the knowledge of a POSITA.

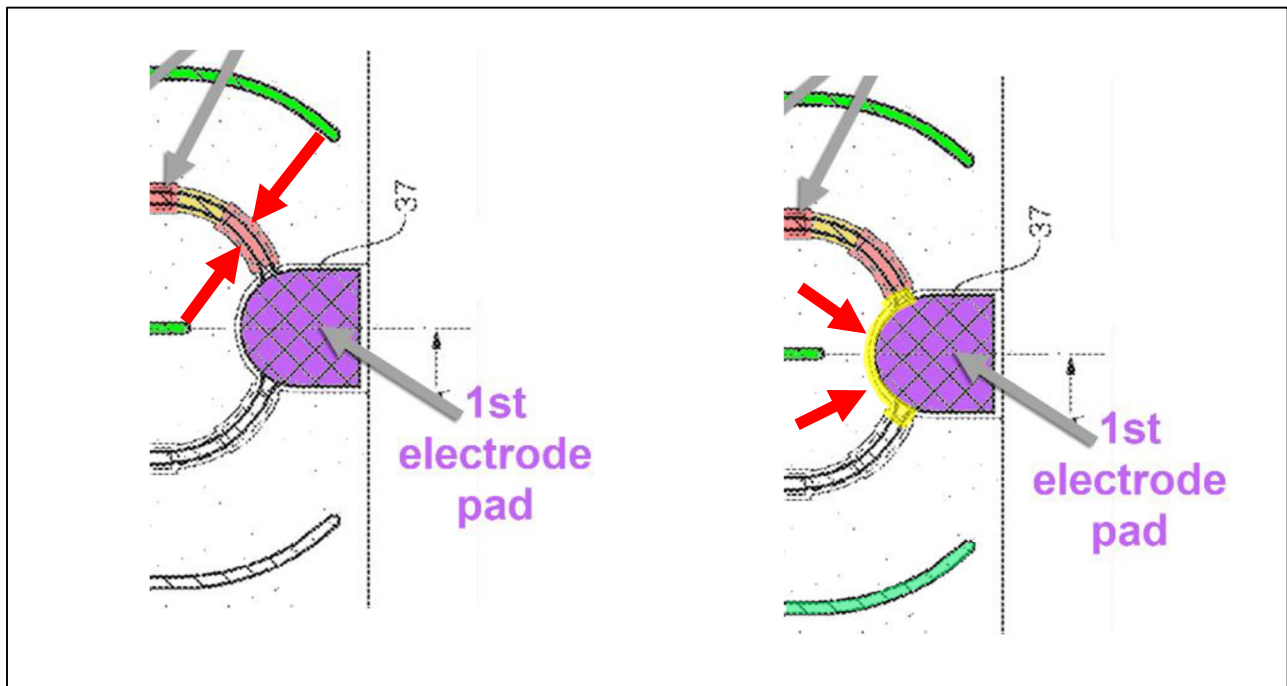
First, the scope of “the plurality of portions of the second extension” is unclear. In order to determine whether “one of the plurality of portions of the first extension” is “disposed between the plurality of portions of the second extension,” as Claim 3 requires, one must identify “the plurality of portions” of the second extension. The Federal Circuit has consistently concluded that the plain and ordinary meaning of “plurality” in a patent is “two *or more*.” See, e.g., *SIMO Holdings*, 983 F.3d at 1377 (“[A] plurality of’ requires two *or more*.”); *Cheese Sys., Inc. v. Tetra Pak Cheese & Powder Sys., Inc.*, 725 F.3d 1341, 1348 (Fed. Cir. 2013) (“The district court correctly assessed that a plurality simply means two *or more*.”); *Dayco Prods., Inc. v. Total Containment, Inc.*, 258 F.3d 1317, 1328 (Fed. Cir. 2001) (“[P]lurality, when used in a claim, refers to two *or more* items, absent some indication to the contrary.”); *Wanker v. United States*, 152 Fed. Cl. 219, 251 (2021) (“[T]he Court construes ‘plurality’ to have its plain and ordinary meaning of ‘two *or more*.’”). Despite being broader than “only two,” Seoul appears to interpret “the plurality of portions” as “only two” by identifying the first two portions of the second extension from FIG. 1. See *supra* §III.O.1, 120–121. As shown below, this interpretation only creates a (red) first region. However, based on FIG. 1, “the plurality of portions” from the second electrode pad

includes **three** extension portions – indicated by the (red) arrows. J. Ex. 26, ¶116. A POSITA would recognize that the plurality of portions of the second extension includes more than two portions and would interpret “disposed between the plurality” as requiring placement of a portion of the first extension within both the (red) first region and (green) second region. J. Ex. 26, ¶116.



Second, even if the applicable scope of “the plurality of portions of the second extension” was ascertainable, “disposed between” is a term of degree—how much “between” the second extension portions must the claimed portion of the first extension be located in order to be considered “disposed between”? See *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (“When a ‘word of degree’ is used, the court must determine whether the patent provides ‘some standard for measuring that degree.’”) (quoting *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010)). The claims do not clarify this, nor does this term of degree have a fixed meaning to one skilled in the art. J. Ex. 26, ¶118. For example, Seoul identifies one type of portion (peach) of the first electrode extension 37a that contacts the first

semiconductor layer. As shown below, depending on the interpretation of “disposed between,” the first (peach) portion may only be *partially* disposed between the (green) upper and middle second extension portions. *Id.* Alternatively, a broader interpretation of “disposed between,” would cover a second type of (yellow) portion from the first electrode extension 37a as being “disposed between” the (green) upper and middle second extension portions as well as the (green) middle and lower second extension portions. *Id.*



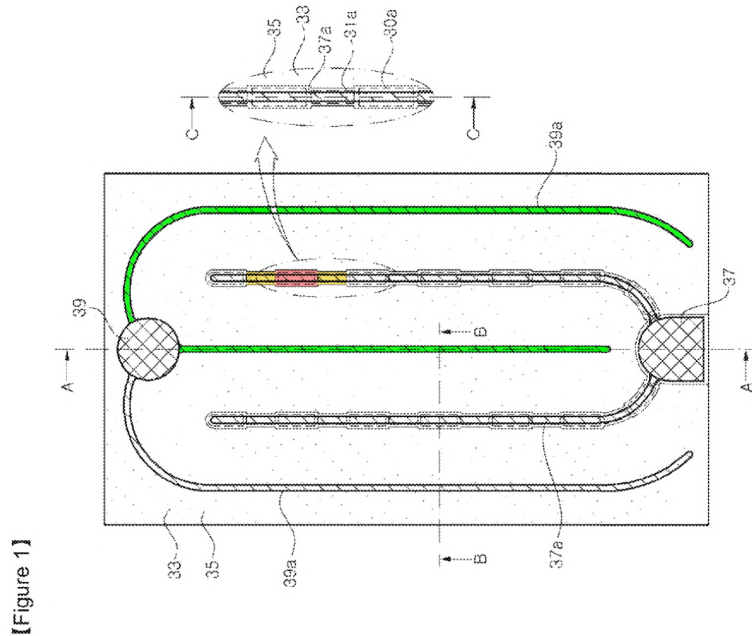
These ambiguities are not resolved by the '314 Patent's specification. J. Ex. 26, ¶¶117-119. Regarding the scope of “disposed between the plurality of portions of the second extension,” the specification is silent. “[D]isposed between” appears only once in the specification: “Moreover, reflectors are disposed between semiconductor stacks and the electrode pad and/or the electrode extensions, thereby preventing optical loss due to the electrode pad and/or the electrode extension.” J. Ex. 7, 7:23–26. This usage of “disposed between” relates to layered semiconductor stacks and provides no additional guidance as to the appropriate scope of disposed between for placement of extensions. J. Ex. 26, ¶117. Thus, while a POSITA would be able to understand that

layers may be “disposed between” other layers in a semiconductor stack, there is no similar description to provide guidance as to how much a claimed portion of the first extension must be “disposed between” the plurality of portions of the second extension. *Id.*

Accordingly, one skilled in the art could not reasonably understand what constitutes the “disposed between the plurality of portions of the second extension” in the context of the ’314 Patent’s claims and specification, making this phrase is indefinite.

3. Seoul’s Reply Position

TCP’s argument is based on a purported ambiguity when considering a hypothetical claim scope requiring more than two “portions of the second extension.” (§ III.Q.2., *supra* at 122-23.) The flaw in TCP’s reasoning is apparent based on the inherent open-ended nature of “comprising” claims as discussed throughout this response -- the same purported issue would exist even if the claim had recited “two portions.” *See Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1371 (Fed. Cir. 2005) (holding that a claim reciting “a group of first, second, and third blades” includes “four, or even more”). Reciting any value (including one) could theoretically encompass a number up to infinity, “[b]ut claim construction is not philosophy; we need not wring our hands when considering the implications of a metaphysical analysis of claim terms.” *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1365 (Fed. Cir. 1999). Instead, as with any issue of claim construction, the issue presented is the term’s meaning in the context of the claims, specification, prosecution history, and proffered extrinsic evidence. *See, generally, Phillips*, 415 F.3d at 1314. The below image and corresponding text from the claims and specification were used in Seoul’s opening brief to illustrate portions of the first extension disposed between portions of the second:



(§ III.Q.1., *supra* at 121; *see also* Feezell Decl. ¶¶60-63.) TCP’s contrary argument based on how a theoretical arrangement might be addressed for purposes of infringement is irrelevant.

In addition, here again TCP purports to respond to Seoul’s position by manufacturing a materially different proposal to attack. In particular, TCP asserts that “Seoul appears to interpret ‘the plurality of portions’ as ‘only two’ by identifying the first two portions of the second extension from Fig. 1.” (§ III.Q.2., *supra*. at 122 (emphasis added).) The use of quotation marks around “only two” is potentially misleading, as Seoul did not use that language. Contrary to TCP’s misdirected argument, Seoul proposes open-ended language consistent with the usage of “comprising” in the preamble and the relevant intrinsic evidence, *i.e.*, that the claim requires at least two portions of the second extension. Although unnecessary, the misplaced argument raised by TCP would be negated by modifying Seoul’s construction to add the underlined language -- *at least one of the portions of the first extension falls within the region between at least two portions of the second extension*. Dr. Krames conceded (as he must) that this modification did not change the meaning of the proposed construction (J. Ex. 25 (Krames Depo.) at 180:21-181:16), which as discussed above,

necessarily encompassed two or more. Instead, Dr. Krames redirected his argument to how the fact finder will ultimately assess whether specific configurations meet the “between” aspect of claim 3. (*Id.* at 182:6-183:1; 184:18-185:18.) That infringement issue, however, is properly posed to the fact finder rather than being the subject of an advisory opinion at the claim-construction stage. *Prism Techs. LLC v. Sprint Spectrum L.P.*, 849 F.3d 1360, 1367 (Fed. Cir. 2017).

4. TCP’s Sur-Reply Position

Seoul’s Reply confirms the fundamental problem with the claim language: “disposed between the plurality of portions of the second extension” is subject to multiple, inconsistent interpretations that materially alter the scope of the claim, rendering the term indefinite. *See supra* §III.Q.3, 125–127; *supra* §III.Q.2, 122–125. Seoul’s interpretation treats “the plurality” as meaning “at least two.” Accordingly, the limitation would be satisfied so long as at least one of the portions of the first extension falls within a single region between any two portions, regardless of how many other portions extend from the second electrode pad. *See supra* §III.Q.3, 126 (stating “...falls within *the region*...”). Seoul also points to the open-ended nature of “comprising” and asserts that “a plurality” inherently means “two or more.” *See supra* §III.Q.3, 126–127. But Seoul misses the point. The ambiguity is not resolved by asserting that “plurality” can include more than two. The dispute is whether “the plurality” refers to the entire set of previously introduced portions that extend from the second electrode pad, or just a subset of at least two. If both interpretations are plausible, the claim is indefinite.

This difference is not a trivial semantic dispute. These competing interpretations define materially different physical configurations and produce different infringement and invalidity outcomes. TCP’s reading gives effect to the definite article and avoids ambiguity by referring to all the portions that extend from the second electrode. Seoul’s “at least two” approach dilutes the

limitation and allows cherry-picking of any two portions from a larger set and calling the limitation satisfied. *See e.g.*, J. Ex. 30, 266:18–267:1 (asserting that “a portion of the upper extension could be between the upper and middle second extensions; it could be between the upper and lower second extensions”). Further, Seoul’s fallback argument—that this is simply a matter of how a fact finder applies the claims—does not cure the underlying problem. *See supra* §III.Q.3, 127. The uncertainty here is not about whether an accused device meets a clearly defined limitation, but what the limitation means in the first place. Because the phrase is susceptible to materially different interpretations, it fails to inform a POSITA, with reasonable certainty, of the claim’s scope.

**R. “second semiconductor layer”
(U.S. Patent No. 9,929,314, Claims 1 and 5)**

Plaintiffs’ Proposal	Defendant’s Proposal	Defendant’s Explanation
Plain and ordinary meaning, or alternatively: <i>a layer of semiconductor material</i>	“a second semiconductor layer separate and distinct from the first semiconductor layer”	Construction of this term may impact validity /invalidity and/or infringement/non-infringement, and may assist the jury.

1. Seoul’s Opening Position

Apparent Agreements: The parties agree that the words “semiconductor” and “layer” do not require construction.

Dispute: Rather than construing the necessary properties of the “second semiconductor layer”, TCP inserts the additional requirements “separate and distinct from the first semiconductor layer.” Given the nature of the infringement and validity contentions, it appears unlikely that this excess verbiage could alter the outcome of this litigation in any way other than creating ambiguity and confusion. More specifically, TCP’s proposal fails to address how the layers must be proven sufficiently separated or distinct. Should TCP seek to explain the materiality of this proposal and

the means by which these additional requirements would be assessed, Seoul will address those topics upon reply.

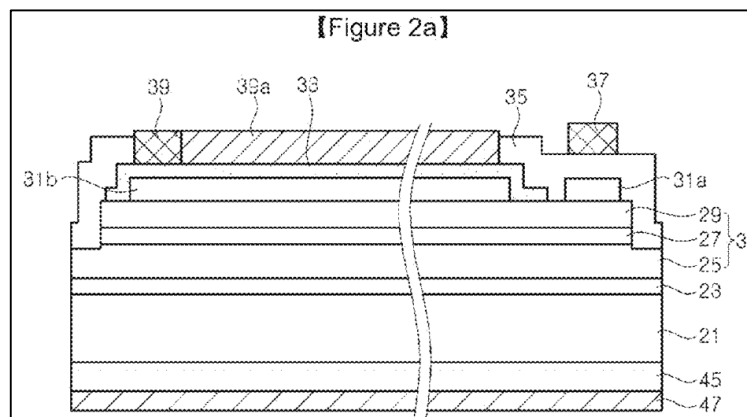
2. TCP's Answering Position

The “second semiconductor layer” term should not require construction. A POSITA reading the intrinsic record would have readily understood “first semiconductor layer” and “second semiconductor layer” recited in the '314 Patent claims to mean the second semiconductor layer is separate and distinct from the first semiconductor layer, as proposed in TCP's construction. J. Ex. 26, ¶125. But now, by not agreeing to this understanding and instead proposing “Plain and ordinary meaning, or alternatively: *a layer of semiconductor material*” Seoul hopes to assert at trial that imaginary horizontal cross sections through TCP's product can create the claimed layers. Therefore, the meaning of these simple terms should be clarified, as TCP proposes.

The claims are consistent with TCP's proposed construction. Claim 1 of the '314 Patent recites a “a light emitting structure” having an active layer that separates two semiconductor layers—“first semiconductor layer, a second semiconductor layer, and an active layer disposed between the first semiconductor layer and the second semiconductor layer.” J. Ex. 7, 29:23–27; *see also id.*, 29:57–61. The claims also qualify the layers as distinct from one another using “first,” and “second,”—a common convention for distinguishing distinct components. *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (“Where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention.”) (internal quotations and citations omitted). In *Regents of the Univ. of Minn. v. AGA Med. Corp.*, the claims recited a device with “first and second disks” and “first and second occluding disks” affixed, joined, or connected to one another to form a structure. *Regents*, 717 F.3d 929, 935 (Fed. Cir. 2013). The Federal Circuit held that the “first”

and “second” qualifiers “fully support[] a requirement of separateness” and that “the two disks must be discrete structures.” *Id.* Here too, “first,” and “second,” indicate that each claimed “layer” is distinct and distinguishable. J. Ex. 26, ¶126.

The specification also demonstrates that the second semiconductor layer is distinct and distinguishable from the first semiconductor layer. J. Ex. 26, ¶127. Specifically, the ’314 Patent specification teaches “the first conductive type semiconductor layer 25 is located on the substrate 21 and the second conductive type semiconductor layer 29 is located on the first conductive type semiconductor layer 25 *with the active layer 27 interposed between* the first and second conductive type semiconductor layers.” J. Ex. 7, 10:59–64. Similarly, FIG. 2a illustrates the “separateness” of the semiconductor layers when describing the semiconductor stack as including “a first conductive type semiconductor layer 25, an active layer 27, and a second conductive type semiconductor layer 29.”



The ’314 Patent also explains that the semiconductor layers have different properties, stating that “the first conductive type semiconductor layer 25 may be an n-type nitride semiconductor layer and the second conductive type semiconductor layer 29 may be a p-type nitride semiconductor layer, or vice versa.” J. Ex. 7, 11:4–7.

Accordingly, TCP proposes a construction for “second semiconductor layer” that would

clarify the second semiconductor layer as separate and distinct from the first semiconductor layer and reject Seoul's attempts to interpret the "second semiconductor layer" as indistinguishable from the "first semiconductor layer."

3. Seoul's Reply Position

The first sentence of TCP's analysis of "second semiconductor layer" asserts that the "term should not require construction." (§ III.R.2., *supra* at 129.) Seoul fully agrees. However, TCP selected the term in the first instance, which forced Seoul to provide an analysis.

During his deposition Dr. Krames expressed his concern that the claim language first and second would be applied to the same layer. (J. Ex. 25 (Krames Depo.) at 190:9-192:13.) And TCP manufactured its own theory on what Seoul intended to do at trial. (*Id.*) There appears to be no actual dispute here, as the claim language as written requires an active layer between first and second semiconductor layers. The proposed construction is untethered to any dispute in this case and merely adds an unnecessary gloss to the language used, which itself could cause confusion. That said, if the Court determines that a construction is required, Seoul will relieve the Court of the burden of selecting between the parties' dueling paraphrases by withdrawing its alternative proposal.

4. TCP's Sur-Reply Position

Seoul contends that no construction is required for "second semiconductor layer" and, so that the Court does not choose between competing constructions, withdraws its alternative proposal of "a layer of semiconductor material." *See supra* §III.R.3, 131. Doing so does not resolve the dispute but underscores the need for TCP's construction. The claim recites a first semiconductor layer, an active layer, and a second semiconductor layer. While this ordering makes it clear that the layers are "separate" because the active layer is disposed between them, the

language does not answer the question of whether the “first” and “second” must be physically distinct structures, or whether they could be different labels for the same semiconductor material. Dr. Krames confirmed this ambiguity in deposition when he acknowledged that, as written, the claims could be interpreted to apply “first” and “second” to the same structure. J. Ex. 25, 190:9–192:13. Contrary to Seoul’s suggestion, there is an actual dispute over scope that must be resolved.

TCP’s construction—“a second semiconductor layer separate and distinct from the first semiconductor layer”—removes the potential for jury confusion. This construction reflects ordinary usage of sequential terms, prevents the “first” and “second” from collapsing into duplicative labels for a single semiconductor material, and eliminates the confusion inherent in Seoul’s prior position that left open the possibility that “first” and “second” describe the same physical structure.

Respectfully submitted,

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